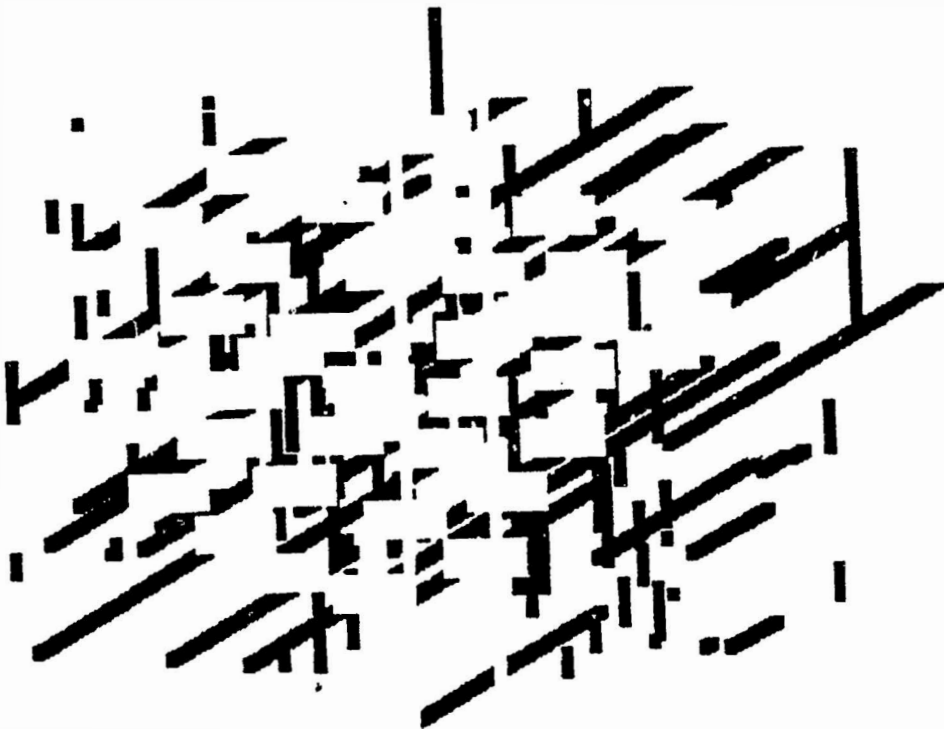


Shaping the Future: Critical Choices on the Road to Excellence



**A Background Paper Prepared for the
Task Force on Critical Choices for Higher Education**

**Jefferson City, Missouri
March 1992**

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The Task Force on Critical Choices for Higher Education was established by the Coordinating Board for Higher Education in December 1991 to advise the Commissioner on the development of an implementation plan that addresses the educational needs of Missouri and charts a new course for the system of higher education.

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101 Adams Street
Jefferson City, Missouri 65101*

Foreword

The Task Force on Critical Choices for Higher Education has been formed by the Coordinating Board for Higher Education in an attempt to realize the ideal of a truly **coordinated** system of higher education in Missouri. It is composed of governing board chairs or their representatives from the public four-year institutions, selected public two-year institutions, and selected independent institutions as well as the president of the State Board of Education. The Task Force's primary mission is to give advice and guidance to the CBHE's staff as it develops an action plan for the future of higher education in Missouri. This plan is scheduled to be presented to the Coordinating Board for its review at its June 26, 1992 meeting. In addition, the Task Force will provide a forum for the direct exchange of ideas on critical issues among institutions within the context of a statewide perspective.

Acquiring a statewide perspective on the system of higher education is crucial because the activities of a single institution affect all others within the system, and the educational needs of the state cannot be addressed by any one institution. On the contrary, Missouri's educational needs are broad and complex, and they require the resources and ingenuity of each institution working cooperatively so that the **system** of higher education can meet state needs more effectively.

The Coordinating Board wishes to thank in advance the members of the Task Force who will be giving so generously of their time and energy to assist the Board and its staff in discharging their responsibilities. Working together, the Task Force can make the critical choices that will shape a bright and prosperous future for all Missourians.

Executive Summary

Shaping the Future has been prepared as a briefing document by the CBHE staff to provide background information to Task Force members regarding critical statewide issues in higher education. Following a general discussion of Missouri's educational needs and some possible goals for the system of higher education, the paper focuses on three themes: 1) institutional missions; 2) funding policies; and 3) governance. Each general topic is divided into sections that discuss specific issues, and at the end of each section are several focus questions which need to be answered by the Task Force to facilitate the subsequent formulation of appropriate public policies necessary to achieve state objectives. This Executive Summary features highlights of the analysis of each main theme; a summary list of the focus questions for each section is provided in Appendix 7.

I. Statewide Needs and Goals

The challenges facing the state as a whole as well as its public and independent colleges and universities are well documented in numerous studies and reports. Major statewide needs include:

- raising the aspirations of individual Missourians for high academic achievement and concurrently raising the public's expectations for the quality of instruction and learning in our schools, colleges, and universities;
- removing barriers to the participation, retention, and graduation of economically and educationally disadvantaged young people and adults, particularly minorities and citizens in rural areas;
- improving the quality and effectiveness of elementary and secondary education, including enhancing the quality and preparation of new teachers;
- improving the quality and effectiveness of undergraduate education, particularly in terms of the analytic and communication skills acquired in general education programs;
- strengthening graduate education and research;

- strengthening the delivery of postsecondary vocational programs and raising the level of adult literacy;
- implementing administrative and structural reforms in the system of public higher education to make it more efficient and accountable;
- demonstrating accountability to students, parents, and the taxpayers by providing evidence that institutions are successful in meeting state-level needs; and
- developing funding policies which are fair, rational, and predictable and which include rewards for demonstrated quality and performance.

In addressing these and other important statewide needs, Missouri's public and independent colleges and universities must view themselves as an integrated whole rather than a collection of individual competing institutions. The first step toward effective action will be to reach agreement on state needs and to develop mutually agreeable, specific statewide goals. By establishing these goals, individual institutions will be in a better position to make decisions which support critical statewide interests. Thus, the Task Force is presented its central task: namely, to identify and agree upon specific statewide goals and suggest specific action plans and timetables to achieve those goals.

II. Institutional Missions

In recent years, institutional missions have tended to become blurred. Various factors are responsible, but the signs are clear that the trend should be reversed. Institutional missions should be refined and coordinated so state and institutional goals can be achieved. Selected highlights of this section of the report include the following.

Mission and Access

- Missouri's system of higher education is large, providing access to higher education opportunities for over 280,000 students enrolled at 13 public four-year college and university campuses, 12 community college districts, and 27 independent institutions.

- Each institution should identify the clientele it can serve best to provide them educational opportunities of the highest quality.
- Many public four-year institutions admit large numbers of underprepared students. This practice sends the wrong message to students in the lower grades regarding the need to prepare for college. It can also be detrimental personally and academically to the underprepared student while having a negative impact on the overall quality and performance of the institutions. Finally, this practice is costly in financial terms for both the state and the students.

Mission and Teacher Education

- Missouri's elementary/secondary schools and its higher education institutions comprise a system that is very interdependent. For example, elementary and secondary schools prepare the next generation of students for colleges and universities while higher education institutions prepare all of the future teachers, principals, and administrators for the public schools.
- It is essential that high standards for entry into teacher education programs and entry into the profession be established to ensure that future teachers become excellent role models who will challenge and inspire all students to achieve their fullest potential.

Mission and Graduate Education and Research

- Excellence in graduate education and research is crucial to the academic, social, and economic vitality of the state and will foster higher aspirations and expectations in all facets of the academy.
- The state's graduate education and research activities should achieve greater national prominence. Special attention should be given to increasing degree completions and strengthening programs in fields that are critical to the state's future.

Mission and Vocational/Technical Education

- Missouri must strengthen the quality and scope of its vocational/technical education and training. Currently, the vocational/technical education and training is

al/technical education delivery system is unable to produce the number and quality of people needed in high-skill trades and technologies. Furthermore, Missouri lacks comprehensive statewide access to basic postsecondary opportunities through its community colleges.

- A central concern is the fragmented organization of the present system. Services are dispersed through both community colleges and area vocational schools while state oversight is spread across several state agencies.

Mission and Fiscal Efficiency

- Two issues are of primary statewide importance in terms of system-wide and institutional efficiency: duplicative program offerings and increasing numbers of administrative personnel.
- A certain amount of duplication is necessary throughout the system; it is not essential, however, that every institution offer a major in every discipline. A determination of unnecessary program duplication requires an analysis based on institutional mission, the need for a particular degree program as well as the clientele served, and the rationale for the breadth of current majors and specializations within a given discipline.
- The proportion of administrative and non-faculty employees has risen in recent years. For example, within Missouri's public four-year sector the proportion of administrative and non-faculty staff increased from 16 percent of all employees in fall 1981 to nearly 22 percent in fall 1991. In the same period, the proportion of faculty decreased from 37.5 percent of the total to 34.8 percent.

Mission and Public Accountability

- Institutions individually and the system collectively should embrace more fully the need to be accountable for educational results as well as financial responsibility, thereby demonstrating in objective terms the benefits conferred to students and to the public at large.
- Accountability should result in concise, understandable evidence that institutions are fulfilling their missions. Institu-

tions should also demonstrate that they are actively working to improve teaching and learning.

III. Funding Policies

The state's funding policies, from direct appropriations to student financial aid, have an enormous impact on both the public and independent sectors of the higher education system. These policies have a profound effect on institutional and student behavior and must be consistent with the strategies for achieving the full array of statewide goals. Selected highlights of this section of the report include the following.

Tuition and Required Fees

- Tuitions and fees have risen quite substantially in recent years even though Missouri public institutions are below the national average in terms of both tuition level and annual rate of change.
- The cost of attending a Missouri public four-year institution is significant and may soon reach an unaffordable level for increasing numbers of Missouri students.
- The size, scope, and funding level of Missouri's financial aid programs can have a profound impact on a student's ability to acquire a higher education, particularly at an independent institution.

State Appropriations

- Limitations on state financial resources available to higher education require the development of a rational, predictable, and effective funding policy.
- There is a need to develop funding policies which will encourage the concentration of existing resources, will target new funds on key priorities and critical state needs, and will provide a rationale for increased public investment in higher education. To the extent institutional aspirations are in conflict with statewide needs, funding policies should favor the achievement of statewide goals.

- Missouri should strive to enhance institutional performance by establishing focused institutional priorities regarding enrollment levels and academic programs and by developing appropriate funding incentives.

IV. Governance

A number of questions have been raised with increasing frequency regarding the effectiveness of the present governance system for higher education. The challenge before the Task Force on Critical Choices for Higher Education is to demonstrate that Missouri's current system of decentralized governance can work. That is, can the institutions respond in a timely, coordinated and effective manner to the demands and constraints of the new state, national, and global environment? Selected highlights of this section of the report include the following.

- Missouri's legal structure for its system of higher education is one that tries to strike a balance between central coordination and institutional autonomy.
- Effective statewide coordination requires identification of state needs, resolution of competing interests, and a collective response to the attainment of essential statewide goals.
- Regardless of the type of governance structure in place, the system of higher education must function with increased clarity of purpose and a clear focus on meeting the needs of students and the state as a whole.
- Financial constraints on both public and independent institutions are increasing. The tendency to focus almost entirely on the financial aspects of the higher education enterprise and to look for a "quick fix" by growth and expansion postpones effective change and disguises fundamental frailties in institutions as well as the system of higher education.

Restructuring the system of higher education to preserve and enhance its quality does not mean, necessarily, that a restructuring of the present system of governance is needed. The CBHE Task Force on Critical Choices for Higher Education has the opportunity to show Missouri that the existing governance structure can and will work to meet the state's needs for higher education. If the Task Force is not able to accomplish this task, then a full review of the current governance system would appear warranted.

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Shaping the Future: Critical Choices on the Road to Excellence

As Missouri approaches the turn of the century, it has the opportunity to participate actively with other states and the nation in planning for self-renewal. The social, educational, and economic changes occurring in Missouri and the nation are well documented and are, indeed, significant. If the challenges resulting from these changes are to be met successfully by Missouri's system of public and independent colleges and universities, a new vision of higher education is needed. Not only will this new vision need to build upon the achievements of the past, but it will also need to anticipate the future, be responsive to rapid technological change, and be steadfast in its commitment to the achievement of goals reflective of high aspirations for the system. One of the objectives of the Task Force on Critical Choices for Higher Education is to help develop a plan for shaping the future of Missouri higher education: a future in which new expectations for excellence are not only achieved but rewarded.

In order to secure their collective futures, the citizens of Missouri need a postsecondary system that is distinguished by the following characteristics:

A vision for the future

- higher education and vocational training services of the highest quality that are truly competitive on a national level;
- a coordinated, balanced, and cost-effective delivery system;
- a range of vocational, academic, and professional programs affordable to all citizens with the preparation and ability to benefit from the programs;
- differentiated institutional missions both among and within sectors designed to meet state needs and goals with a minimum of program duplication; and
- systematic demonstration of institutional performance and accountability through appropriate assessment efforts.

The necessity of change

To achieve this new vision, Missouri's colleges and universities will need to develop more sharply focused missions, establish more effective partnerships with schools and other organizations, analyze their employment practices in terms of the number of administrative and non-faculty personnel they hire, make better use of technology, and enhance academic excellence through systematic documentation of results. The transition to this future will be discomfoting to the complacent or to those who are content with "business as usual." This transition must, however, be made if the system is to provide the highest quality educational opportunities for all Missourians.

In order to achieve these lofty goals, a set of public policy initiatives is needed that will lead to a new era in Missouri higher education: an era in which the system of higher education is designed to preserve and enhance institutional quality and performance in an environment of limited resources. The Coordinating Board's goal is to design a system of higher education which utilizes resources effectively and addresses statewide needs.

Meeting this challenge requires that Missouri's system of higher education be viewed as an integrated whole rather than as a collection of individual institutions. The vision of the past in which each institution pursued its own ends, without significant regard for the role, scope, mission, and funding of other institutions, is no longer desirable. The development of a new plan for the system of higher education requires that thoughtful consideration be given to those fundamental elements which define the system of the future: institutional missions; funding policies; and governance. With these elements in mind, this paper examines the state's needs for postsecondary educational services and related performance goals for the system.

I. Responding to Missouri's Needs: Goals for Missouri Higher Education

The utility of linking perceived needs and problems with the attainment of specified objectives is well recognized. The pursuit of goals focuses institutional energies on actions that lead to results and solutions. Within the field of education the best known effort in this regard is the National Education Goals for the Year 2000 promulgated by President George Bush and the nation's governors. Collectively, these goals have established a national agenda for educational reform and have become a catalyst for many initiatives at the state and local levels to produce improved results. (See Appendix 1 for a listing of these goals.) In order to realize some of these advantages and to communicate effectively a future-oriented agenda with the public, Missouri's higher education institutions would be well-advised to adopt a series of statewide goals that would reflect the state's needs for improved educational services.

The opportunities and challenges facing the state as a whole as well as its public and independent colleges and universities are well documented. In the last three years more than 20 studies and reports have been prepared describing the social, educational, and economic conditions of Missouri's citizens as well as its businesses and industries (see Bibliography). These reports collectively provide a serious critique of Missouri's educational system and its ability to meet the state's needs for instruction, research, and public service. These reports are generally in agreement regarding the need to address the following issues:

Identifying statewide needs

- raising the aspirations of individual Missourians for high academic achievement and concurrently raising the public's expectations for the quality of instruction and learning in our schools, colleges, and universities;
- removing barriers to the participation, retention, and graduation of economically and educationally disadvantaged young people and adults, particularly minorities and citizens in rural areas;
- improving the quality and effectiveness of elementary and secondary education, including enhancing the quality and preparation of new teachers;

- improving the quality and effectiveness of undergraduate education, particularly in terms of the analytic and communication skills acquired in general education programs;
- strengthening graduate education and research;
- strengthening the delivery of postsecondary vocational programs and raising the level of adult literacy;
- implementing administrative and structural reforms in the system of public higher education to make it more efficient and accountable;
- demonstrating accountability to students, parents, and the taxpayers by providing evidence that institutions are successful in meeting state-level needs; and
- developing funding policies which are fair, rational and predictable and include rewards for demonstrated quality and performance.

By establishing statewide goals that relate to these needs, Missouri's system of public and independent colleges and universities will be in a better position to make decisions which support these critical statewide interests. Examples of specific statewide goals and objectives could include the following:

- the percentage of Missouri high school graduates who will have taken a college preparatory core curriculum in high school will exceed 90 percent;
- every Missouri high school will offer Advanced Placement courses;
- minorities will participate and succeed in Missouri's system of higher education in proportions at least equal to their representation in the larger society while minorities will be employed on institutional faculties and administrative staffs in proportion to their availability by profession or discipline;
- all newly certified public school teachers entering the profession must be as highly qualified as possible: 90 percent of the students admitted to teacher education programs will score at

Defining statewide goals

the 66th percentile or above on the ACT; exit assessment scores on the NTE will be sufficiently high to assure that Missouri's prospective teachers are competent in their certification fields; and prospective secondary teachers will attain a level of performance in their content field comparable to well-prepared arts and sciences majors in the same field;

- Missouri will have 15 graduate programs at the doctoral level that rank in the top 15 nationally;
- the number of students completing associate, baccalaureate, and doctoral degrees in disciplines in short supply and which are important to the state's future (e.g., manufacturing technologies, the physical sciences, life sciences, mathematics, and foreign languages) will more than double, and the number of graduates in these disciplines scoring above the 80th percentile on nationally normed assessments will also increase two-fold;
- the percentage of Missouri baccalaureate graduates from the state's public colleges and universities scoring above the 50th percentile on nationally normed exit assessments in the major field of study will rank among the ten highest recorded for all states;
- the number of students successfully transferring from Missouri's community colleges and completing a baccalaureate degree at one of the state's public or independent four-year institutions will double;
- all citizens will have reasonable geographic access to basic general education and vocational education instruction at the lower division level through a statewide network of area vocational technical schools and expanded community college service regions; and
- through appropriate financial aid policies and contracting arrangements, the state of Missouri will enhance student choice, will reduce unnecessary program duplication, and will facilitate the enrollment of one-third of all higher education students in independent sector institutions.

Appropriateness of these goals

One of the issues before the Coordinating Board is to determine if these examples are appropriate statewide goals and if other similar

*Linking missions,
funding and governance*

goals should be considered. If the needs which exist are to be met and specific goals for higher education are to be achieved, the existing missions, funding policies and governance structure of Missouri's higher education institutions and system as a whole will need to be reviewed systematically in the context of **mutually agreeable** statewide objectives. A key challenge for the state of Missouri is to develop policies and goals which balance state-level needs, policy development, and planning with the efficiencies and responsiveness of decentralized decision making and management. Thus, an important issue the Task Force on Critical Choices for Higher Education will want to consider is: "How can Missouri's existing decentralized governance structure best address the problems and issues outlined in this background paper and improve the system's performance in meeting the needs of the state?" A major challenge will be to demonstrate that Missouri's current structure of decentralized governance can and will work, i.e., autonomous institutions will work together to develop agreement on statewide goals and will cooperate to address statewide needs.

Three fundamental elements of the system need to be systematically reviewed in the context of developing action plans to implement a new vision responsive to the challenges of the future. These elements include:

- **Institutional Missions** -- those statements which describe an institution's purpose in terms of clientele served as well as level and distinctive mix of programs in both the arts and sciences and applied areas;
- **Funding Policies** -- how fiscal resources are received, allocated, and spent to ensure that the state's and an institution's higher education goals are achieved; and
- **Governance** -- the decision-making structure which will clarify where and what body makes decisions so institutions individually and the system collectively can operate most effectively.

The following pages will familiarize Task Force members with these three elements of the system. The most extensive discussion (pages 7-49) is devoted to the topic of institutional missions. Many fundamental issues relate to this issue and are developed in some detail. Funding is discussed on pages 50-56, and governance is treated briefly beginning on page 57.

II. Institutional Missions

In November 1991 the Pew Higher Education Research Program, of the Pew Charitable Trust, and the Western Interstate Commission on Higher Education (WICHE) sponsored a conference on current issues of higher education for the educational and legislative leadership of the sixteen member states of WICHE. The report of this conference, published by the Pew Charitable Trust in *Policy Perspectives*, March 1992, includes the following statement about institutional missions and role differentiation.

Distinctions among the roles and missions of public institutions are often vague. Beyond differences in the level of degrees awarded, it is often difficult to distinguish one institution from another. The tendency of public colleges and universities is to describe their missions in terms that look and sound like those of their peers. As a result, institutions often overlook the opportunity to build on their particular strengths and to design programs that serve the needs of unique student groups. In striving to conform to the general ideal, institutions overlook the opportunity to define their own "market niche."

Developing differentiated missions

No single factor is responsible for the urge to be all things to all people. The demands of society and the ambitions of institutions themselves have resulted in a blurring of mission on the part of institutions. But revenue diets, increasing enrollments, concerns about quality, and a changing economy will mean that institutions must define and emphasize their distinctive strengths if the needs of states -- and the goals of institutions -- are to be met. Review, revision, and adherence to institutional roles and missions are needed.

It is clear that issues related to institutional missions are not unique to Missouri. Indeed, most states are concerned about the increased uniformity of missions among colleges and universities. If Missouri is to strengthen and diversify its system of higher education, the missions of Missouri's institutions must be reviewed within the context of the state's need for higher education services.

Mission and Providing Access to Appropriately Prepared Students

Missouri has a tremendous resource in its system of postsecondary education, and the variety of institutions which exists is one of the strengths of the system. Our system is one in which all Missourians can take pride. It is composed of over 420 institutions which provide both vocational and academic programs at the postsecondary level. Missourians' geographic access to public and independent two- and four-year colleges and universities is graphically shown in Figure 1. These sectors include the following:

Missouri's system of higher education is large and complex

- four campuses of the University of Missouri system, Lincoln University and Northeast Missouri State University which all serve statewide missions;
- four public regional institutions -- Northwest in Maryville, Central in Warrensburg, Southwest in Springfield, and Southeast in Cape Girardeau;
- three state colleges -- Harris-Stowe in St. Louis, Southern in Joplin, and Western in St. Joseph;
- twelve community college districts; and
- twenty-seven independent two- and four-year colleges and universities.

In all, 56 higher education campuses are governed by 49 separate boards of trustees, regents, and curators. While this is an impressive group of colleges and universities, not included in this figure are the 120 private vocational and career schools certified by the CBHE, or the 58 postsecondary vocational education centers supervised by the Department of Elementary and Secondary Education. Also, Missouri has about 200 private postsecondary schools offering programs leading to licensure and certification reporting to various boards associated with the Department of Economic Development.

While all of these schools recruit students directly out of high school, many also provide advanced educational opportunities for adults who are returning to complete their degrees or are continuing their professional education. Typically, vocational/technical schools and community colleges offer programs at only the certificate, diploma,

Figure 1

Missouri Institutions of Higher Education

- Four-year Public Institutions
- Four-year Independent Institutions
- Two-year Public Institutions
- Two-year Independent and Military Institutions
- Residence Centers (with affiliation)

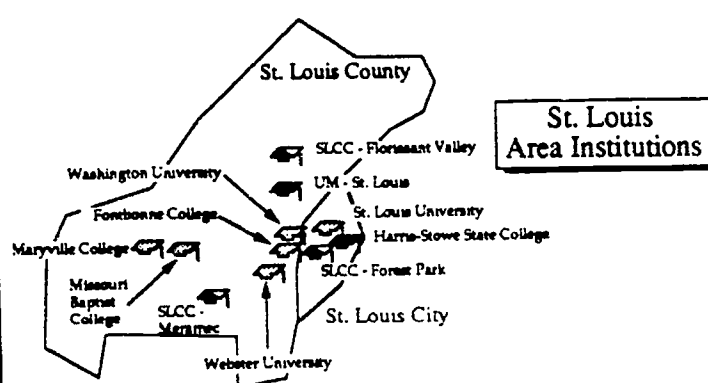
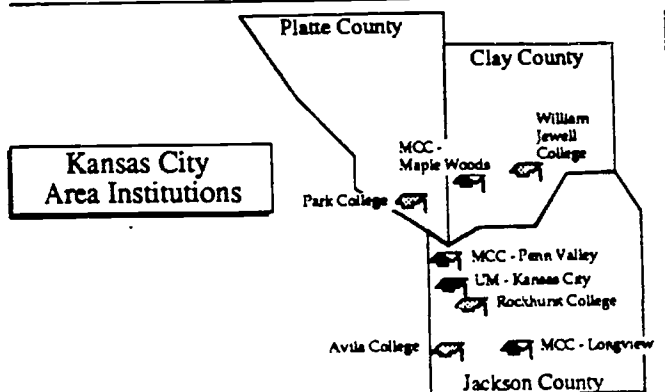
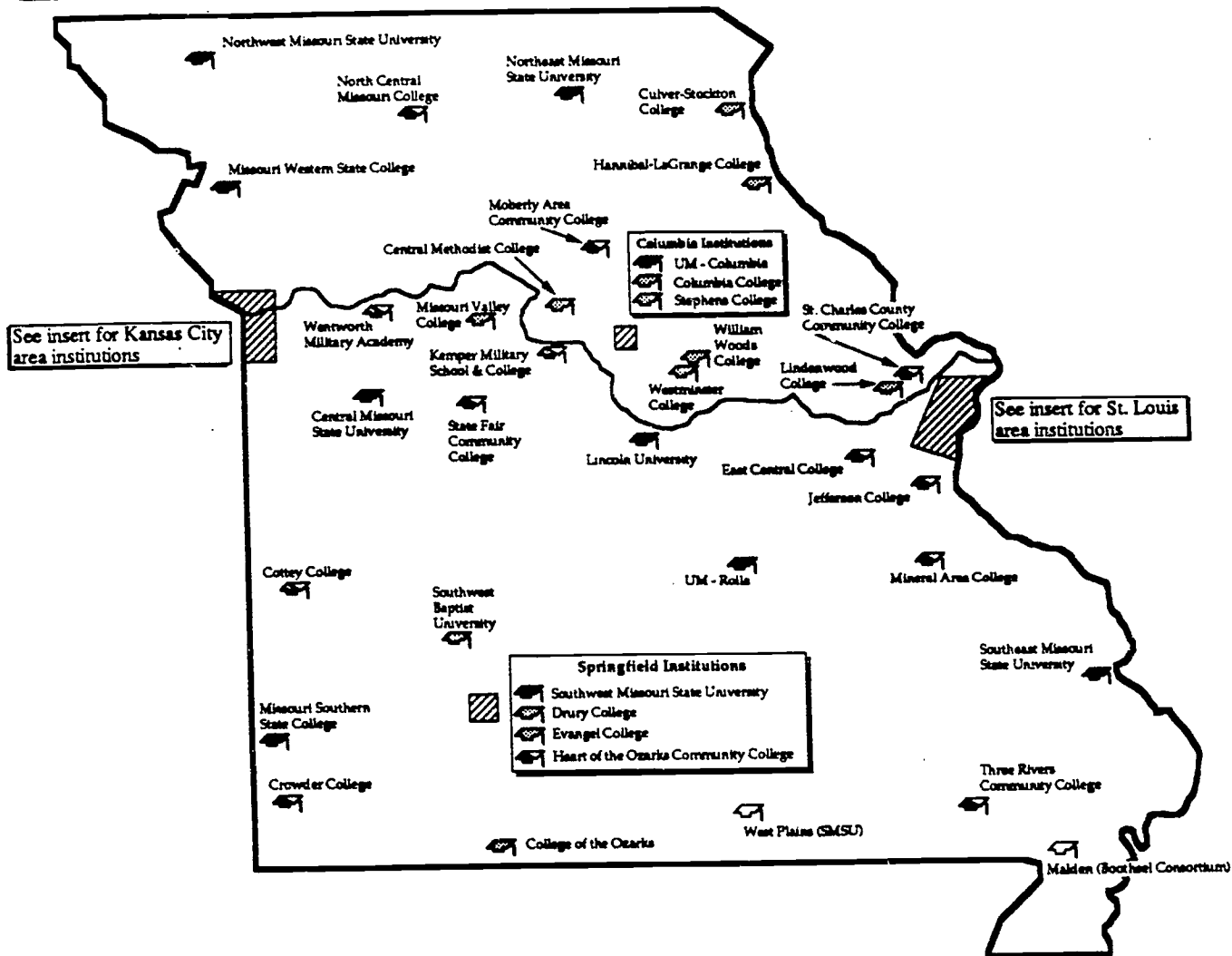
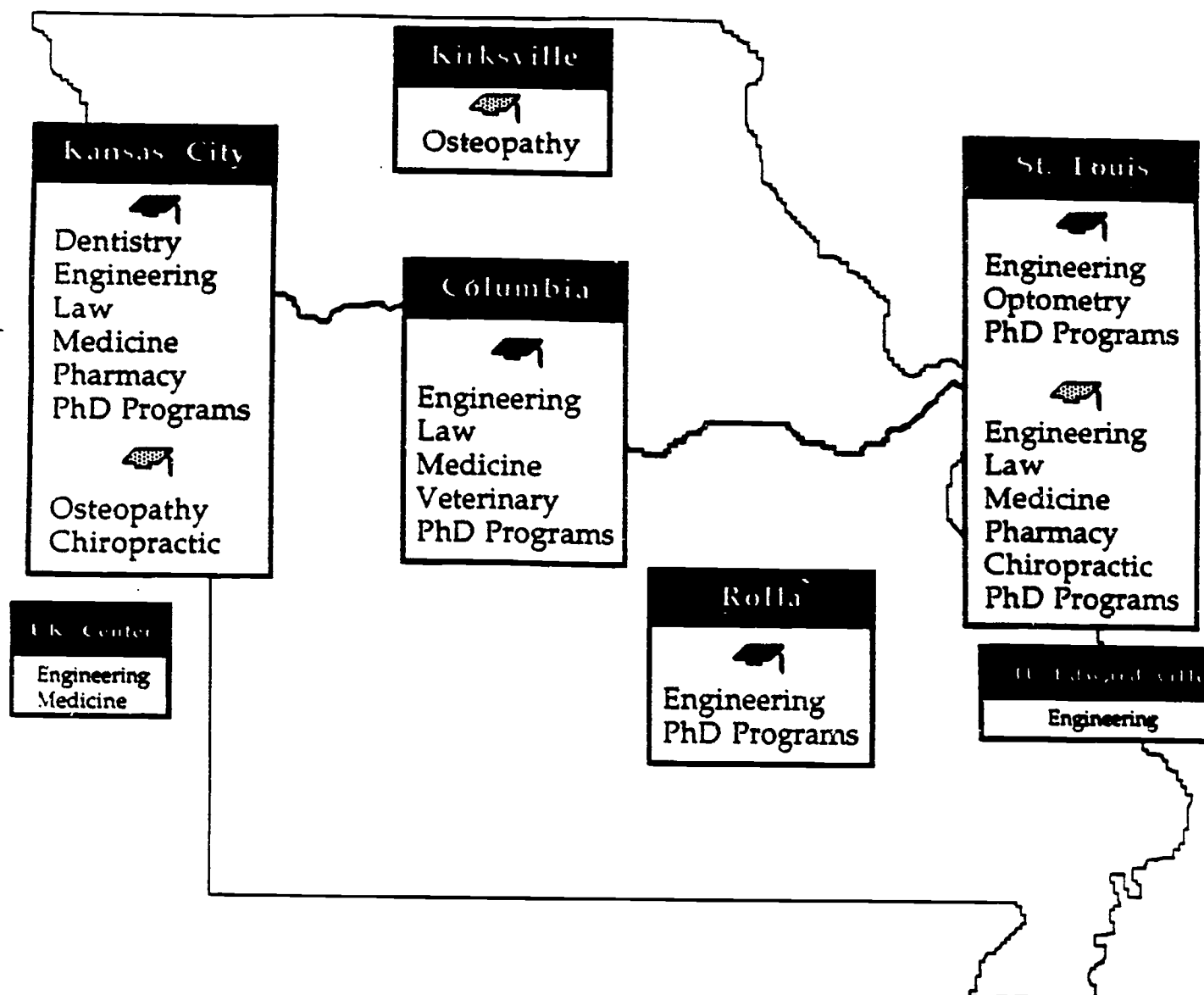


Figure 2
First Professional, Doctoral, and Engineering Programs in Missouri and Surrounding Areas



Programs available at public institutions



Programs available at independent institutions

and associate degree levels while many four-year public and independent colleges and universities offer programs from the associate's degree through the master's degree. A select few institutions offer doctoral programs. Missourians also have access to a variety of professional programs (Figure 2).

Within this extensive postsecondary education delivery system, the public and independent two- and four-year institutions serve a very large number of Missouri citizens. In fall 1991 the public and independent collegiate institutions provided access to higher education to over 283,300 students which equated to almost 194,600 full-time equivalent students (Figure 3). Missouri's public four-year colleges and universities serve slightly more than 50 percent of the full-time equivalent students (97,542); the public community colleges serve nearly 22 percent of the state's full-time equivalent enrollment (42,505); and Missouri's independent colleges and universities comprise the remaining 28 percent (54,540 full-time equivalent students).

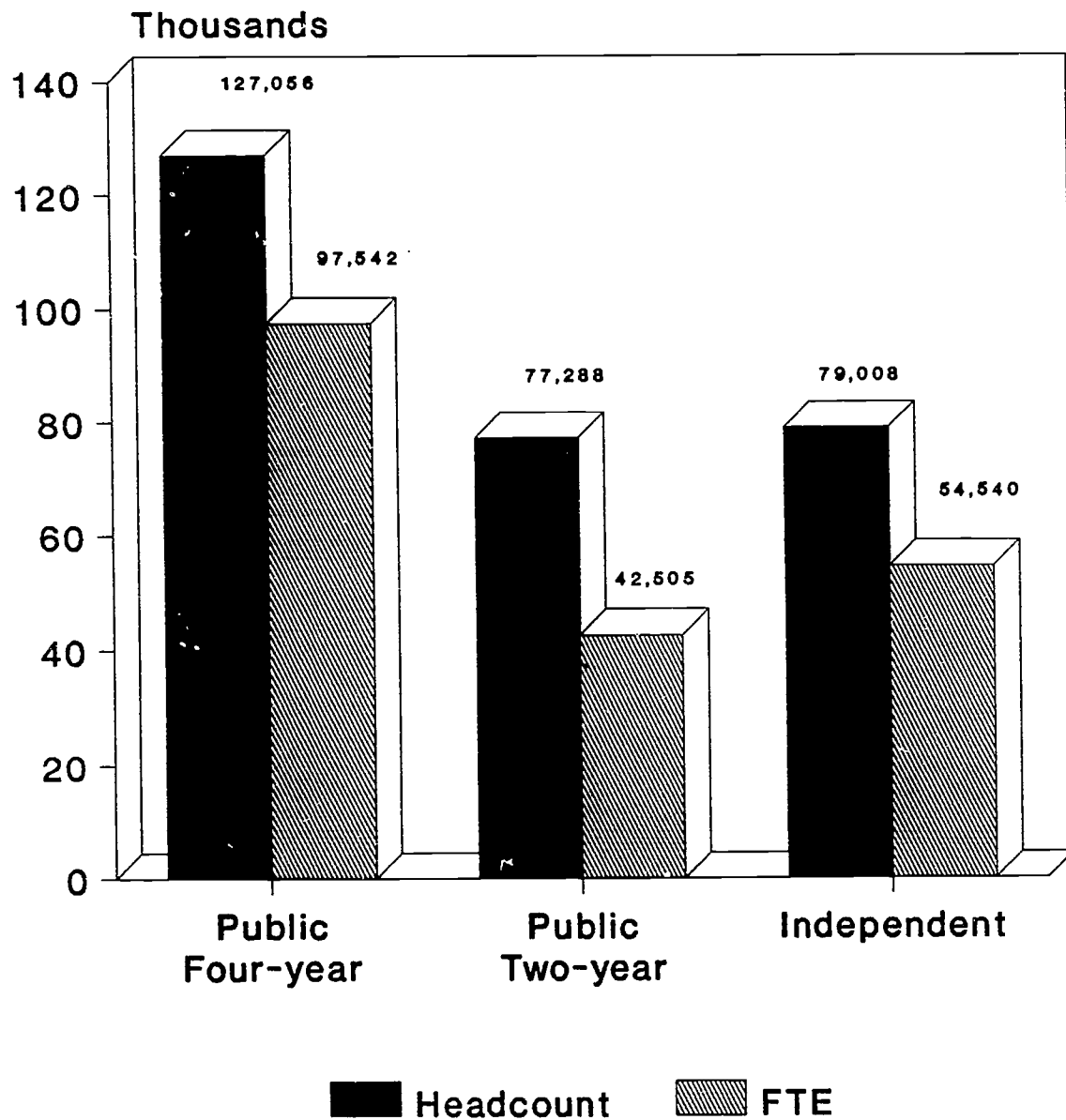
The system of higher education is, however, changing in terms of the students, or clientele, being served. Between fall 1981 and fall 1990, Missouri's public four-year institutions have experienced a decline of nearly 11 percent in the number of on-campus, full-time equivalent, first-time freshmen. The public community colleges have witnessed a 21 percent decrease in the number of on-campus, full-time equivalent, first-time freshmen while the independent colleges saw the number of their first-time freshmen increase 13 percent since fall 1981. Meanwhile, total undergraduate on-campus FTE for the system of both public and independent institutions increased 10.9 percent between fall 1981 and fall 1990 (33.8 percent for the public two-year; 1.7 percent for the public four-year; and 14.1 percent for the independent sector), suggesting that significant numbers of part-time nontraditional students are entering the system while increasing numbers of traditional students are taking longer to complete their courses of study.

Clientele served is changing

Other characteristics of Missouri's current higher education students include the following.

- Total enrollment of women in the system increased from 52 percent in fall 1981 to 56 percent in fall 1990; participation by women increased comparably in all sectors.

Figure 3
Enrollment in Missouri
Higher Education, Fall 1991



Source: DHE02

- Part-time enrollment increased 36.3 percent for the system; comparable increases were 36 percent, 27 percent, and 50.4 percent, respectively, for the public two-year, public four-year, and independent sectors.
- African-American students represented 8 percent of the total state headcount enrollment in fall 1990. Between fall 1982 and fall 1990, both the public four-year and independent sectors showed no change in the percentage of African-American enrollment as a proportion of total headcount enrollment, although absolute numbers of African-Americans in both sectors increased. The public two-year sector experienced a relative decrease in both percentage terms as well as absolute numbers of African-Americans (see Figures 4,5, and 6).
- Over 14 percent of the total full-time undergraduate enrollment was over 25 years of age; the distribution by sector was approximately 11.5 percent, 24 percent and 14 percent for the public four-year, public two-year and independent institutions, respectively.

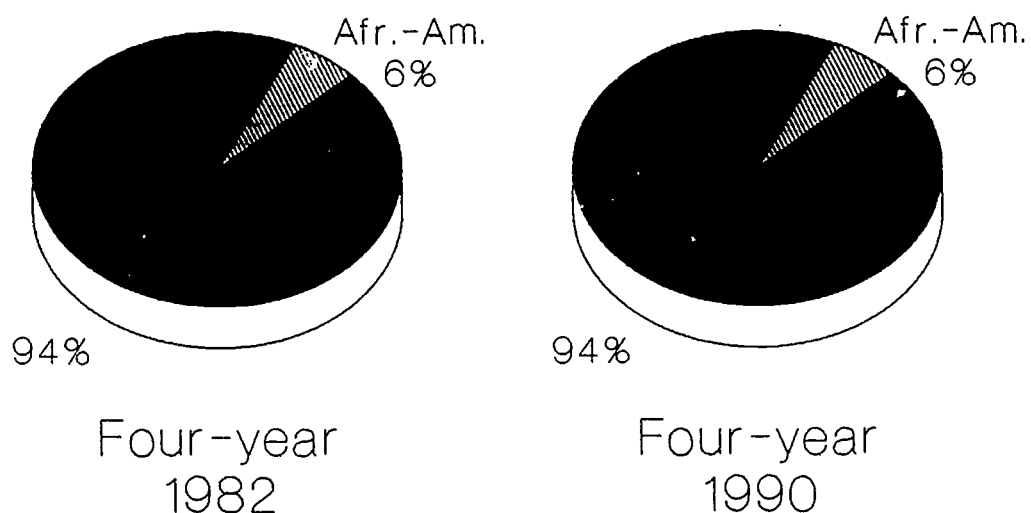
Thus, the clientele of Missouri's higher education system is becoming more diverse and presents more challenges to institutions as they seek to meet the needs of these students. Policy-makers must not lose sight of the fact, however, that the majority of the students at most institutions are still drawn from traditional categories and that these students will continue to provide the primary pool of prospective students in advanced graduate studies at the doctorate level and in the professional schools.

While providing access to higher education is an important public policy, the performance of colleges and universities as measured by the graduation rates of those students enrolled is also a critical issue affecting the development of the state's work force. As shown in Figure 7, undergraduate enrollment in Missouri's public four-year institutions has increased over the last ten years by nearly 4,000 students, but the number of baccalaureate degrees conferred during academic year 1989-90 was only 100 higher than in academic year 1981-82.

One factor affecting persistence to graduation involves the level of preparation and academic achievement of entering students. Using ACT data, Table 1 shows that a total of 22 percent of the freshmen

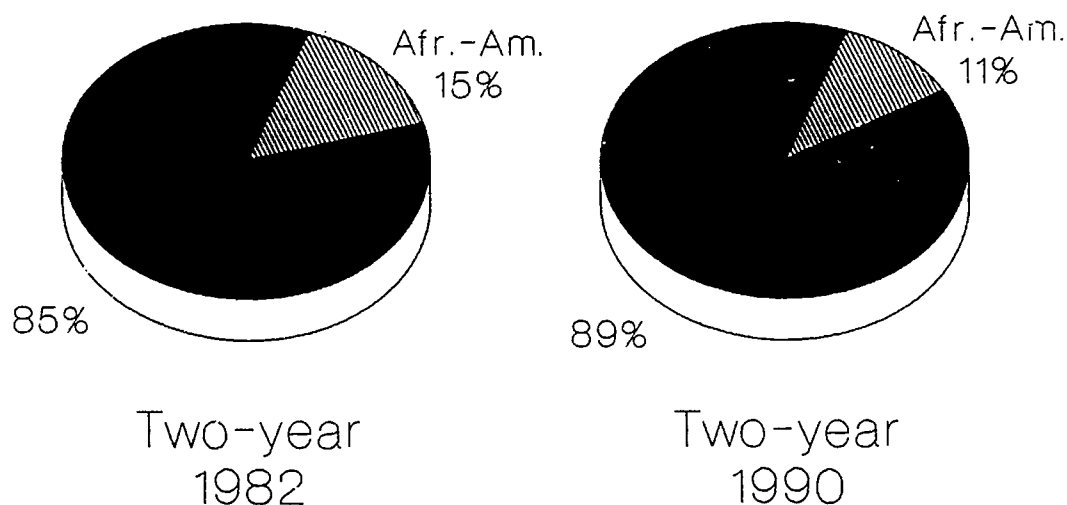
Increasing persistence to graduation for all students

Figure 4
African-Americans as a % of Total
Headcount Enrollment: Missouri Public
Institutions, Fall 1982 and Fall 1990
Four-year



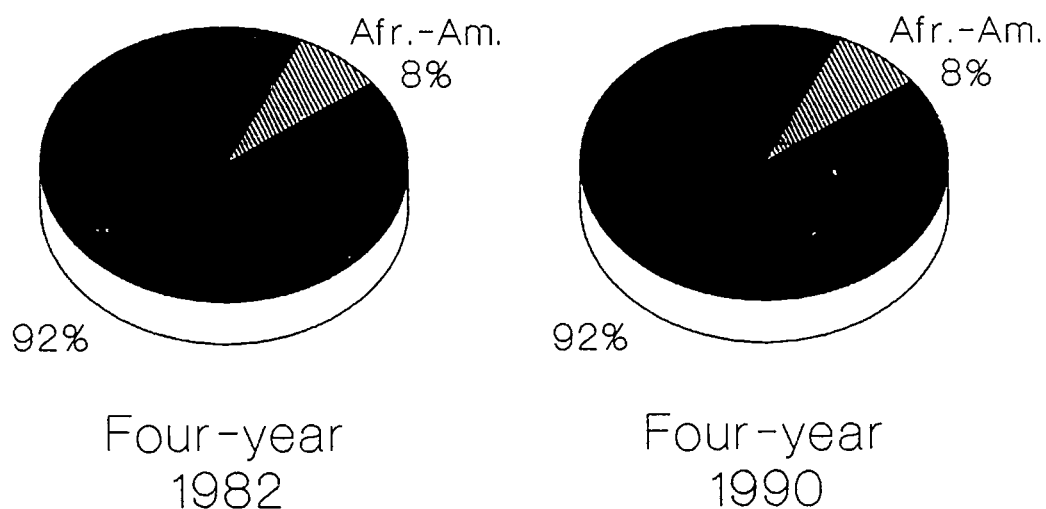
Source: IPEDS EF, Fall Enrollment form

Figure 5
African-Americans as a % of Total
Headcount Enrollment: Missouri Public
Institutions, Fall 1982 and Fall 1990
Two-year



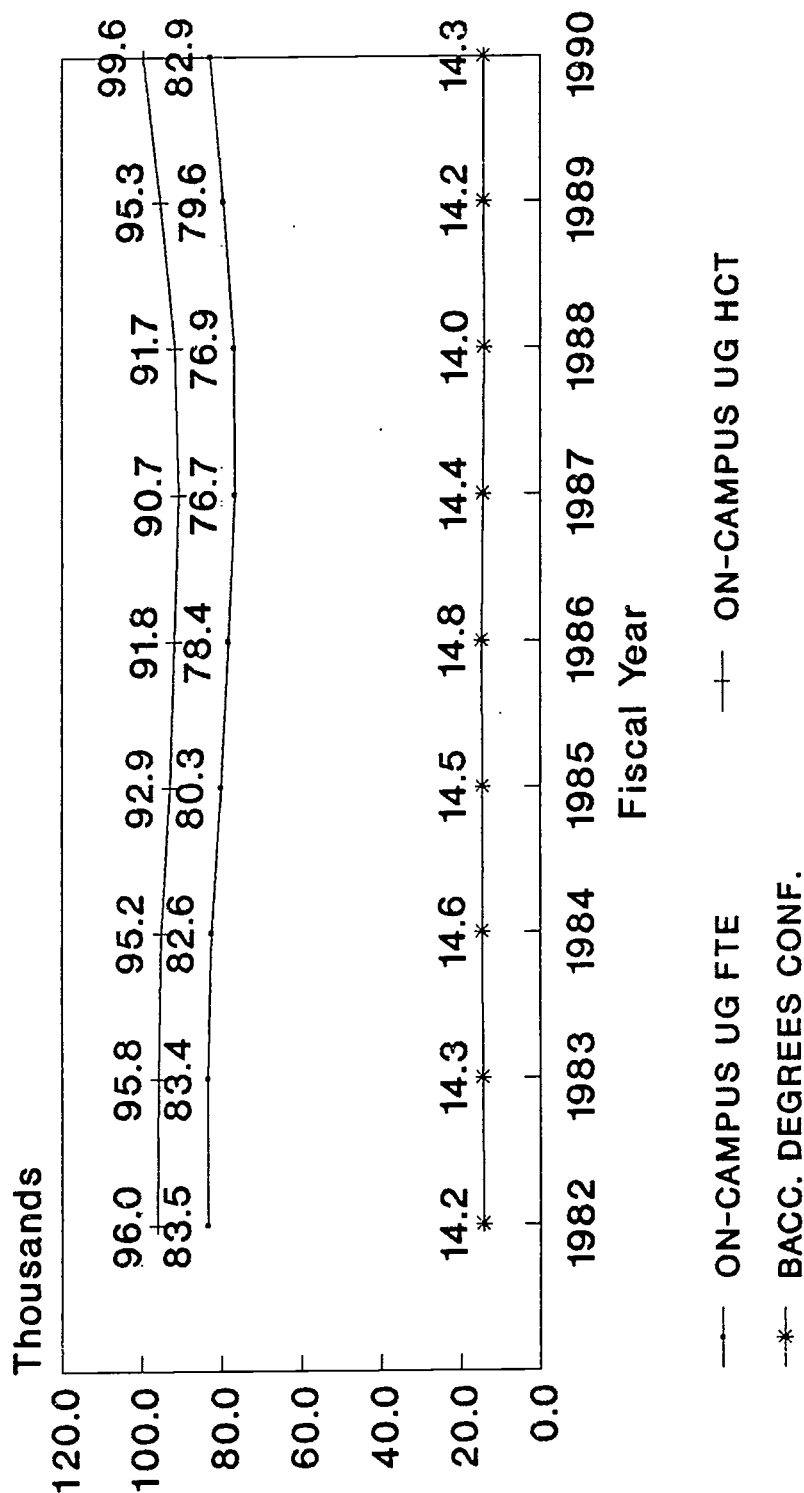
Source: IPEDS EF, Fall Enrollment form

Figure 6
African-Americans as a % of Total Head-
count Enrollment: Missouri Independent
Institutions, Fall 1982 and Fall 1990
4-Year



Source: IPEDS EF, Fall Enrollment form

Figure 7
Missouri Public 4-Year Institutions
Enrollments and Degrees Conferred



SOURCE: DHE02 AND IPEDS DEGREES
CONFERRED

Table 1
Fall 1991 Enrolled Freshmen by ACT Composite Test Score (22 and Above, 18 and Below)
Missouri Public Four-year Colleges and Universities

Institution	Fall 1991		ACT Composite Test		ACT Composite Test		ACT Composite Test		African-American		ACT
	Enrolled	ACT	Score 22 and Above	Percent	Score 18 and Below	Percent	Score 18 and Below	Percent	Freshmen	Percent	
	Freshmen	Tested	Number		Number		Number		Number		
Harris-Stowe State College	62		9	15%	38	61%	40	65%	40	65%	16.7
Missouri Western State College	786		168	21%	430	55%	43	5%	43	5%	16.9
Lincoln University	621		132	21%	328	53%	201	32%	201	32%	16.9
Central Missouri State University	2,010		639	32%	832	41%	201	10%	201	10%	16.6
Northwest Missouri State University	1,121		381	34%	352	31%	23	2%	23	2%	18.2
Missouri Southern State College	815		316	39%	255	31%	10	1%	10	1%	19.7
Southeast Missouri State University	1,483		598	40%	384	26%	93	6%	93	6%	18.6
Southwest Missouri State University	2,992		1,295	43%	657	22%	87	3%	87	3%	18.6
University of Missouri-St. Louis	651		343	53%	86	13%	70	11%	70	11%	19.2
University of Missouri-Columbia	3,263		2,432	75%	132	4%	136	4%	136	4%	21.4
University of Missouri-Kansas City	459		343	75%	33	7%	33	7%	33	7%	21.3
Northeast Missouri State University	1,356		1,133	84%	19	1%	62	5%	62	5%	21.3
University of Missouri-Rolla	688		609	89%	19	3%	25	4%	25	4%	22.4
Total	16,307		8,398	51%	3,565	22%	1,024	6%	1,024	6%	18.5

Source: 1991-92 Institutional ACT Class Profile Report, American College Testing Program

admitted to the public four-year sector scored at or below the 33rd percentile (the bottom third) of Missouri's spring 1991 ACT-tested high school seniors. Meanwhile, other data show that the comparable figure for Missouri's independent institutions is 16 percent. The clientele served by institutions, in terms of the ability levels of admitted students, is one of the major elements of an institution's mission. A concern sometimes expressed about raising admissions standards is the impact this action would have on the diversity of the student body. Specifically, critics have suggested that selective institutions will become too homogeneous -- denying access to historically underrepresented groups, especially African-Americans. Yet, the data available do not support this conclusion. The number of African-American freshmen and their respective ACT composite scores, as shown on Table 1, indicate that many minorities score in the upper two-thirds on the ACT.

It is a fallacy, therefore, to assume that increasing quality and preserving access are competing values. Higher education in Missouri must continue its commitment to increasing the participation and graduation of historically underserved groups, especially minorities. Not only is such a policy morally right, but it is simply in society's best interest to benefit from the talent of all its members. More attention must be given to early outreach activities that will raise the expectations of all students, including minorities, in order to ensure that all students take rigorous courses in high school to better prepare themselves for success in college. Those who fear that raising standards will hurt minorities should recognize that a preferred strategy is to help the underprepared student -- regardless of his or her ethnic heritage -- rather than to increase access through lowered standards. The former approach raises the tide for the benefit of all, while the latter simply ensures mediocrity. Increasing minority student participation and graduation rates should remain a major priority at Missouri colleges and universities.

*Increasing quality and
preserving access are not
competing values*

Figure 8 demonstrates how public policies that support low or no selectivity at four-year baccalaureate degree-granting institutions can affect the quality and performance of colleges and universities. These data show that in fall 1990, 19 percent of the freshmen entering a Missouri public four-year college or university received an ACT composite score of 18 or below (at or below the 33rd percentile), while only 8 percent of the spring 1990 baccalaureate degree recipients at these institutions were students with low (the bottom third) ACT scores. By comparison, those freshmen in fall 1990

Low-achieving high school students may be three times less likely to graduate from college

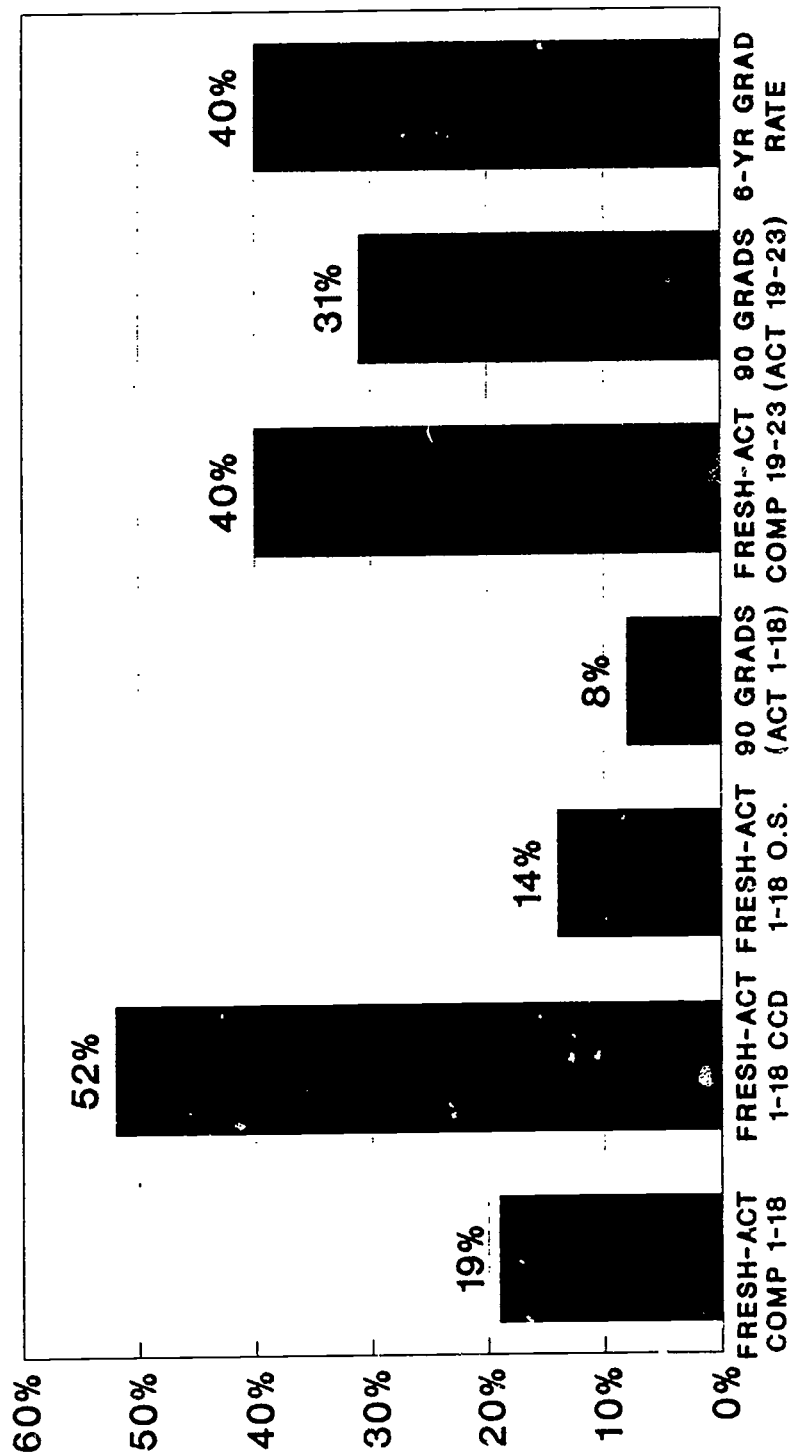
achieving an ACT composite score of 19 to 23 represented 40 percent of the entering freshmen while 31 percent of the 1990 baccalaureate degree recipients had ACT scores in this range. Although these numbers represent different cohorts of students, they suggest that students who have demonstrated low achievement at point of entry may be three times as likely not to finish a baccalaureate degree compared to first-time freshmen who have demonstrated higher achievement. Since it is also known that completion of a solid college preparatory core curriculum in high school can increase student performance an **average** of 3 points on the ACT, public policies that impact student course-taking behaviors in high school can positively impact degree completion rates.

Also shown in Figure 8 is the fact that these low performing students have access to higher education at institutions other than four-year baccalaureate degree-granting colleges or universities. Of the 19 percent of the fall 1990 freshmen scoring at or below the 33rd percentile on the ACT, 52 percent graduated from a Missouri high school located within a Missouri open-enrollment community college district. Another 14 percent came to Missouri from a high school located in another state. Thus, two-thirds of these students have access to other higher education opportunities that may be better suited to their needs than a Missouri public four-year college or university.

Students whose achievement levels are among the lowest third of students graduating from high school as measured by the ACT also score low on a variety of skills needed to be successful in college. For example, a student who scores an 18 or below on the ACT composite score will, in general, score at or below the 36th percentile on the English portion of the ACT test, at or below the 45th percentile on the mathematics portion, and at or below the 32nd and 31st percentiles on the reading and science reasoning portions of the test, respectively. Low-scoring students also indicate that they will need more assistance than other students when they enroll in college.

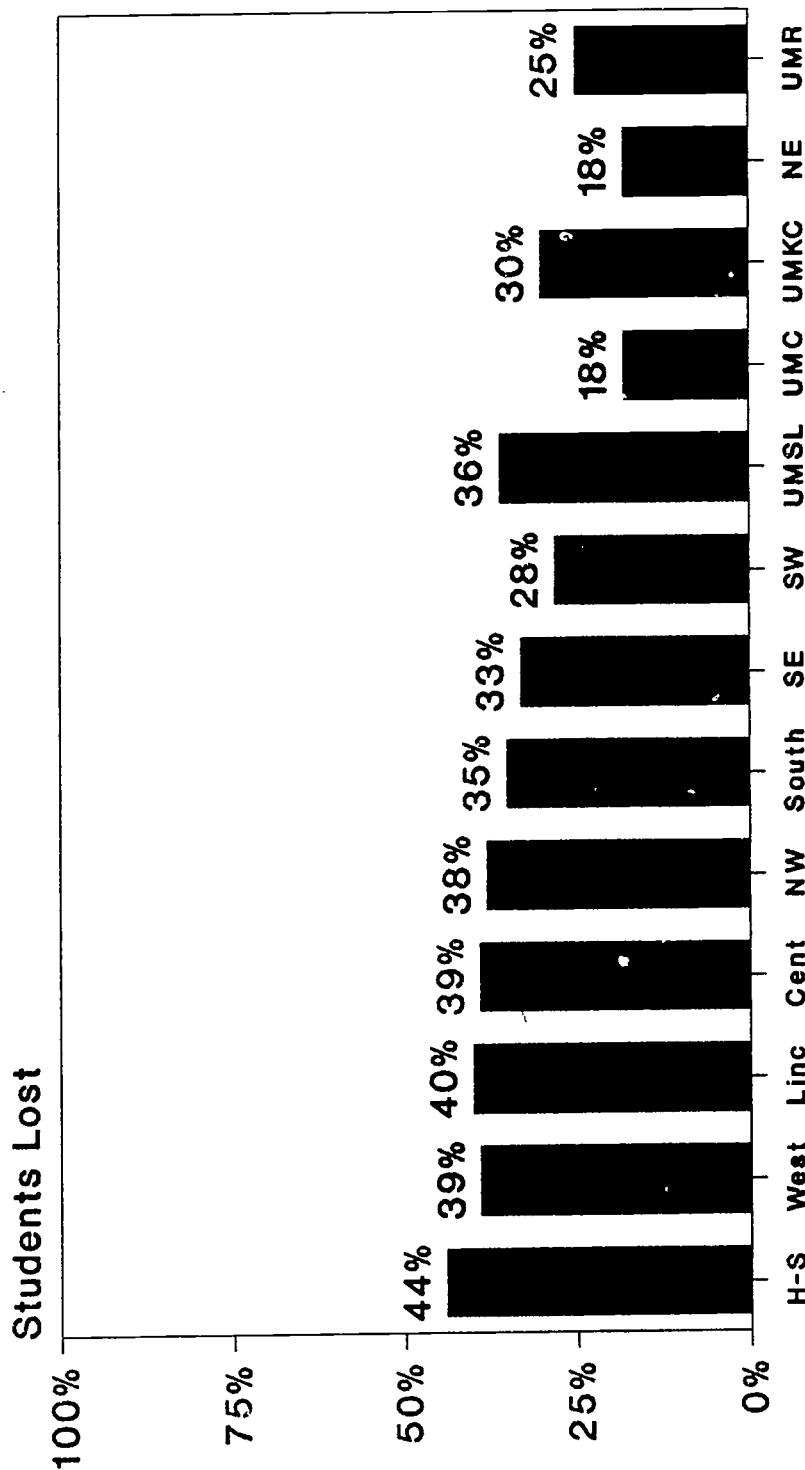
One consequence of enrolling such high proportions of low-achieving students at Missouri's public four-year institutions is the high freshman-to-sophomore attrition rates shown in Figure 9. Notably, the four institutions enrolling the largest proportions of freshmen scoring at or below the 33rd percentile on the ACT composite score are the same institutions with the highest freshman-to-sophomore attrition rates. Another consequence, as shown for Missouri public four-year

Figure 8
Missouri Public Four-year Total
Profile 1990 Freshmen and 1990
Baccalaureates



Note: CCD indicates from a community college dist. OS indicates out-of-state. Grads are baccalaureate recipients only.

Figure 9
Freshman-to-Sophomore Attrition, 1989-90
1989 ACT-tested Freshmen



Note: Data for Harris-Stowe are based on a very small sample
Source: Table 9, ACT Inst. Reports

institutions in Figure 8, is that only 40 percent of the fall 1984 freshmen completed a baccalaureate degree after six years. Individual institutional rates varied considerably from 6 percent to 49 percent. The national average for baccalaureate degree completion after six years is 49 percent.

At public four-year institutions only 40 percent graduate after six years

A public policy toward access to higher education which lacks rigorous standards for admission to public four-year institutions sends the wrong message to students and their parents about what is expected of them, not only for success in college, but increasingly for gainful employment. The message conveyed is that regardless of what one does during the high school years, admission to many, if not most Missouri colleges and universities is assured. As a result, only 40 percent of the freshman enrolled in Fall 1990 at a Missouri public four-year college or university took a defined core of college preparatory courses in high school. Other indicators of how poorly students are prepared for college, as well as work, are being reported by both faculty and business leaders. For example, there is increasing concern that students cannot communicate effectively, have poor computational skills, and do not work well in teams.

There is ample evidence to suggest that completion of a solid core curriculum in high school will substantially improve the academic performance of students in college. Regardless of general ability level, students who complete the core curriculum in high school on the average score three points higher on the ACT, achieve college grade point averages (GPAs) that are nearly half a point higher, and have an average persistence rate from the freshman to sophomore year that is 10 percent higher than those students not taking a college preparatory course of study in high school.

Completion of a high school core curriculum is positively related to academic performance in college

In December 1991, after extensive deliberation, the Coordinating Board adopted a model 16-unit high school core for admission to Missouri's public four-year institutions to be fully implemented in fall 1996 (see Appendix 2). The Coordinating Board believes that by establishing statewide minimum expectations linking completion of a core high school curriculum to admissions standards for all public four-year institutions, a clear message is sent to high school students, their parents, and their counselors that decisions in high school have direct consequences on students' options regarding college attendance. It is also assumed that by setting this policy a desired effect of raising the academic preparation of high school graduates throughout the state will be achieved. Institutional endorsement of

this new policy has been variable despite the fact that the Department of Elementary and Secondary Education has given its full endorsement and prospective high school freshmen (those graduating in 1996) will be registering for their high school classes in just a few months.

While it has been argued that some college is better for unprepared students than none, the evidence suggests that in purely economic terms this is true only to a limited extent. For example, in 1990 the Brookings Institute in Washington, D.C. reported in "A Future of Lousy Jobs? The Changing Structure of U.S. Wages," that a person with less than a high school diploma earned, on average, \$10,039 per year. This annual wage compares to a person with a high school diploma earning \$16,191 per year, and a person with some college, \$16,939. A person with a baccalaureate or higher degree earned, on average, \$29,213 per year. If a prospective student does not have the necessary preparation or interest to complete a baccalaureate degree, he or she may be better advised to attend a community college or area vocational school and acquire appropriate marketable skills. U.S. Department of Labor studies suggest that 80 percent of all new jobs will require some postsecondary education, but only a portion will require a baccalaureate degree. Appropriate vocational training can greatly enhance the earnings potential of a young person and can, in some cases, provide the background necessary for further study. Should such students be interested in attaining a baccalaureate degree, the option of transfer remains open once the necessary academic skills are acquired.

*Inadequate preparation
is detrimental to the
student, the institution,
and the state*

Providing direct access to a baccalaureate degree at a four-year institution for low-achieving students who are not adequately prepared requires substantial remediation at an institution that is frequently ill-equipped to provide this type of instruction. Furthermore, the lack of persistence to graduation for these students comes at a high cost to state taxpayers. The high cost involves not only the resources appropriated for higher education in support of students ill-prepared for college, but also the negative impact on individual students who will experience failure and the consequent loss of talent to the state. Thus, any future planning for Missouri higher education should address the issue of the level of achievement students should have before they enroll in public four-year institutions as well as the issue of "fit" between the student's skills and the academic demands of the institution. This urgency is illustrated by remarks made by a longtime Missouri State Senator, Wayne Goode, who is a friend of higher education. At a recent Senate appropriations hearing he

made the following observation: "It doesn't do the youngsters any good to have them there for a semester or two -- money spent for those students who are only in school for a semester or two is money wasted."

Public Policy Questions and Perspectives

This discussion raises certain public policy issues regarding Missouri's system of public and independent higher education institutions and its relationship to the elementary and secondary school system. An issue of central importance is the state's policy regarding access as reflected in admissions standards for Missouri's public colleges and universities. Indeed, one can expect that any discussion of this matter will be no less difficult than the discussions held in recent years by the members of the National Collegiate Athletic Association in setting standards for participation in intercollegiate athletics (the NCAA standards are provided in Appendix 3 of this report). In addressing the policy issues related to institutional missions and admissions standards, the Coordinating Board would benefit from the Task Force considering several questions, including the following.

Improving student preparation

1. How can Missouri's higher education system and its K-12 system cooperate to assure that high school graduates are well prepared for college and the world of work?
2. How can Missouri's higher education system and its K-12 system cooperate to promote increased high school graduation rates, higher collegiate participation rates, and improved baccalaureate completion rates for minority students?
3. What programs could be implemented to encourage students to take responsibility for remedying deficiencies while in high school, rather than at college? How can high school and collegiate faculties work together to address the underprepared student problem?
4. What should be the respective roles of Missouri's four-year institutions and community colleges in providing instruction to the underprepared student? Should Missouri's public four-year colleges and universities continue to admit large numbers of low-achieving and inadequately prepared students? If so,

what limitations, if any, should exist and which four-year institutions should be designated for this role?

5. How can the Coordinating Board's policies regarding articulation between institutions contribute to the solution of the underprepared student problem? Should students scoring among the lowest third of all high school graduates or failing to complete a college preparatory curriculum who reside in an open-enrollment community college district be denied admission to a public four-year college or university? Should any low-achieving or inadequately prepared out-of-state student be admitted to a Missouri public four-year college or university?
6. What policy initiatives are necessary to sustain and enhance Missouri's independent colleges and universities in terms of enrollment policies?
7. What changes need to be made in the admissions guidelines of the very selective Missouri universities to make them even more competitive nationally?

Mission and the Preparation of Missouri's Future Classroom Teachers

Interdependence of the K-12 and higher education systems

The interdependence of Missouri's elementary and secondary education system and its higher education system is increasingly evident in a variety of ways. While the K-12 system is preparing the next generation of students for colleges and universities, higher education institutions are preparing all of the future teachers, principals, and administrators for the public schools. Furthermore, each system is directly affected by the strengths and weaknesses of the other. Well-prepared secondary students are a strength to the overall quality of universities, and those who choose teaching become successful role models for another generation of students. On the other hand, poorly prepared students can foster mediocrity at the university level resulting in poorly prepared future teachers who are unable to inspire their students. Thus, somewhat belatedly perhaps, these two systems are beginning to recognize and respond to the reality that they are a "seamless web."

Of course, the histories of many of Missouri's institutions are intimately tied to the development of the teacher education profession. For example, Missouri's regional state universities were originally established as regional normal schools for the purpose of preparing classroom teachers for the state's elementary schools. Over time, the regional normal schools evolved to become state teachers colleges and then regional state universities offering an array of arts and sciences programs as well as several programs in applied areas. Northeast Missouri State University has since been designated the state's liberal arts and sciences institution. Furthermore, Harris-Stowe State College's history as a historically black institution operated by the St. Louis School District is unique in Missouri, and it is possibly the last remaining "normal" school, not only in Missouri, but perhaps in the nation as well. In addition, 23 independent institutions have state-approved teacher education programs, and the community colleges, under the supervision of the Department of Elementary and Secondary Education, have approval to provide up to 15 hours of lower-division professional teacher education course work as part of their transfer function. Finally, as a practical matter, teacher education is crucial to the activities of most of Missouri's four-year institutions. With only the discipline of business graduating more majors statewide, teacher education accounts for nearly 14 percent of all baccalaureate degrees awarded in the public and independent sectors combined and more than 17 percent of all degrees conferred in the public four-year sector alone.

The importance of highly qualified teachers to the state of Missouri and the nation is best expressed in a May 1990 report to the Coordinating Board for Higher Education, *Missouri Higher Education and Economic Development: Stimulating and Abetting Insightful Action*. That report states:

Government reports and the popular media are replete with instances of America's waning performance in the educational arena. The ability of the United States to compete successfully in a global economy while maintaining a competitive edge resides, ultimately, on the ability of our educational infrastructure to provide our nation and states with the highest quality education available to ensure that our human resources are second to none. It is in the arena of human resource development, and the quality of that development, that American higher education is ultimately best prepared to stimulate

The critical role of good teachers

***High standards for the
teaching profession***

and abet insightful action in response to the issues of, and demands for, economic development. **In this regard, the singular most critical factor affecting human resource development is the classroom teacher.**

In December 1990 the Coordinating Board released the report and recommendations of its Task Force on the Recruitment of Missouri's Future Teachers, *Meeting the Challenge: Recruiting Classroom Teachers for Missouri's Future*. This report contains several recommendations for strengthening teacher preparation programs as well as the need to recruit the most highly qualified students to the teaching profession. Specifically, the report makes recommendations regarding the following topics (see Appendix 4 for the full text of the recommendations as approved by the Coordinating Board):

- collaboration on school/college issues by the State Board of Education and the Coordinating Board for Higher Education;
- entry-level academic achievement of Missouri's future teachers;
- subject area knowledge of Missouri's future teachers;
- student financial aid and incentive programs for future teachers;
- alternative entrance to the profession; and
- enhanced research in teaching through Centers of Eminence in Teaching.

Unfortunately, some of these recommendations have met with strong resistance. Most of the institutions have, for example, been reluctant to raise entrance requirements to their teacher education programs and the State Board of Education (SBE) has stopped requiring the ACT for entrance into Missouri's teacher education programs. In addition, the SBE has adopted minimum requirements on the National Teachers Examination exit requirement that fall short of the recommendations of the Coordinating Board and the Task Force.

Regarding the issue of increasing the number of minorities in the teaching profession, some observers have noted that as a consequence of the end of the Cold War the forced, early retirement of

Increasing the number of minority teachers

many career military servicemen and servicewomen, including substantial numbers of minorities, could potentially produce many new prospective teachers if appropriate entrance requirements for transition into the profession are developed. Unfortunately, Missouri has particularly difficult alternative means for entry to the teaching profession, as was cited in a recent article in the *Wall Street Journal*, and there appears to be little serious effort to change this circumstance. Notwithstanding these challenges, as recently as October 1991 the Coordinating Board renewed its commitment to the Task Force report, including raising the state's expectations for future teachers and developing more flexible alternative certification policies.

Public Policy Questions and Perspectives

The role of the classroom teacher is vital to any person's future. A single teacher can make the difference in the lives of hundreds of students. Teachers can nurture interest in critical subjects such as science and mathematics, can help students to aspire to reach their potential in all areas, and can instill a love for lifelong learning. Clearly, many questions involve how and where Missouri might best prepare its teachers as well as the relationship of those issues to institutional missions. Some of these questions include the following.

1. Should all of the public four-year colleges and universities, except the University of Missouri-Rolla, offer teacher education programs? If so, how selective should their standards be for admission to and graduation from these programs?
2. What are some specific strategies that can be employed to increase the number of minorities in teacher education programs and the profession?
3. What should be the differential roles of Missouri's public and independent universities in producing new teachers and in meeting the needs teachers have for continuing professional education?

Mission and Strengthening Graduate Education and Research

Limited doctoral degree production

Enhancing the graduate education and research missions of the University of Missouri, as well as Missouri's independent doctoral and research institutions, is a worthy goal for the state as a whole. Much work is required, however, if the University of Missouri is to be recognized nationally as a major graduate institution with strong research programs in the arts and sciences. Table 2 shows a 27 percent increase in the number of doctoral degrees awarded by the University of Missouri between academic year 1980-81 and 1990-91; this number in 1990-91 is, however, only 353. Of this number, only 17 doctorates were awarded in disciplines related to the life sciences, 6 in mathematics, and 36 in the physical sciences. By comparison, while the University of Missouri-Columbia awarded slightly more than 27 percent of its degrees at the master's and doctoral degree level last year, the University of Michigan-Ann Arbor, an institution nationally recognized as a major research and graduate institution, awarded 37 percent of its degrees at those two levels of graduate study.

While the University of Missouri awarded 27 percent more doctoral degrees in academic year 1990-91 than in 1980-81, Missouri's independent doctoral degree-granting universities conferred eight percent fewer doctoral degrees in academic year 1990-91 than in 1980-81 (declining from 271 to 250). Of the 250 doctorates awarded by the independent institutions, 48 were in the life sciences, 11 in mathematics, and 30 in the physical sciences. Overall, Missouri's public and independent doctoral degree-granting universities conferred 10 percent more doctorates (Table 3) in 1990-91 than 1980-81 (increasing from 549 to 603).

Although the above figures indicate relatively low productivity of doctorates, the number of foreign nationals receiving degrees at Missouri institutions masks the extent of the problem. Missouri is fortunate to have these students, but in many disciplines foreign nationals account for a large percentage of the graduates. Since these students often return to their homelands, Missouri and the nation derive little direct long-term benefit from their training. Thus, the need to recruit more Americans, particularly Missourians, into these programs is more imperative than these numbers alone suggest.

Table 2
HISTORICAL TREND IN DOCTORAL DEGREES CONFERRED BY PUBLIC
INSTITUTIONAL SECTOR BY DISCIPLINE AREAS, FY 1981 TO FY 1991

	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	%CHANGE 81-91
1862 LAND - GRANT												
01 AGRICULTURE	17	21	19	28	34	26	21	19	27	42	18	6%
02 BUSINESS	8	11	9	11	8	2	4	3	9	3	7	-13%
03 COMMUNICATIONS	3	4	1	5	6	6	6	8	3	2	4	33%
04 COMPUTER SCIENCE	1	1	2	1	1	1	5	2	5	3	3	200%
05 EDUCATION	110	96	121	104	97	106	89	97	102	85	100	-9%
06 ENGINEERING	36	19	36	33	29	44	41	51	53	54	62	72%
07 ENG/SCIENCE-REL.TECH	0	0	0	0	0	0	0	0	0	0	0	0%
08 FINE ARTS	5	10	6	6	12	6	8	10	11	15	9	80%
09 FOREIGN LANGUAGE	5	1	2	0	1	1	0	3	0	1	0	-100%
10 HEALTH	1	1	3	14	11	9	10	12	16	15	11	1000%
11 HOME ECONOMICS	2	6	5	4	3	2	6	9	3	1	4	100%
12 HUMANITIES/GENERAL	3	6	4	16	10	10	8	8	13	9	14	367%
13 LIFE SCIENCE	22	33	10	16	16	9	7	15	21	17	17	-23%
14 MATHEMATICS	5	5	8	4	3	6	7	5	5	5	6	20%
15 PHYSICAL SCIENCE	20	30	12	20	23	22	24	27	21	31	36	80%
16 PUBLIC SERVICES	0	0	0	0	0	0	0	0	0	0	0	0%
17 SOCIAL SCIENCE	40	34	38	58	50	46	46	52	45	58	62	55%
18 OTHER PROFESSIONAL	0	0	0	0	0	0	0	0	0	0	0	0%
19 VOCATIONAL TECHNICAL	0	0	0	0	0	0	0	0	0	0	0	0%
20 AVOCATIONAL	0	0	0	0	0	0	0	0	0	0	0	0%
PUBLIC COLLEGE &												
UNIVERSITY TOTAL	278	278	276	320	304	296	282	321	334	341	353	27%

Table 3
HISTORICAL TREND IN DOCTORAL DEGREES CONFERRED BY PUBLIC AND INDEPENDENT
INSTITUTIONAL SECTORS BY DISCIPLINE AREAS, FY 1981 TO FY 1991

	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	81-91 %CHANGE
01 AGRICULTURE	17	21	19	28	34	26	21	19	27	42	18	6%
02 BUSINESS	14	23	16	22	12	8	6	3	12	8	23	64%
03 COMMUNICATIONS	3	4	1	5	6	6	6	8	3	2	4	33%
04 COMPUTER SCIENCE	3	1	2	2	2	1	6	3	7	9	7	133%
05 EDUCATION	185	160	178	173	142	149	121	116	146	129	138	-25%
06 ENGINEERING	50	32	54	42	43	54	54	64	68	73	75	50%
07 ENG/SCIENCE-REL.TECH	0	0	0	0	0	0	0	0	0	0	0	0%
08 FINE ARTS	11	17	13	11	15	10	12	14	16	18	11	0%
09 FOREIGN LANGUAGE	8	5	10	10	9	7	8	12	7	4	4	-50%
10 HEALTH	4	3	6	15	12	11	11	14	18	15	18	350%
11 HOME ECONOMICS	2	6	5	4	3	2	6	9	3	1	4	100%
12 HUMANITIES/GENERAL	13	18	22	29	27	33	19	16	20	30	31	138%
13 LIFE SCIENCE	67	80	50	50	54	52	46	50	66	69	65	-3%
14 MATHEMATICS	15	15	16	7	5	13	11	9	10	8	17	13%
15 PHYSICAL SCIENCE	39	55	24	44	43	41	41	43	45	53	66	69%
16 PUBLIC SERVICES	4	11	13	13	8	6	5	5	9	5	12	0%
17 SOCIAL SCIENCE	111	97	98	119	96	104	88	85	93	102	97	-13%
18 OTHER PROFESSIONAL	3	2	6	4	1	4	3	0	6	3	13	0%
19 VOCATIONAL TECHNICAL	0	0	0	0	0	0	0	0	0	0	0	0%
20 AVOCATIONAL	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	549	550	533	578	512	527	464	470	556	571	603	10%

A related and notable factor involving the difficulty Missouri's doctoral universities have in recruiting and graduating more students in key doctoral disciplines, i.e., those critical to the state's and nation's technological future, is shown in Figure 10. Before Missouri can recruit more graduate students into these disciplines, this state, as well as other states, must find ways to graduate more students from these disciplines at the baccalaureate level. As noted in Figure 10, since academic year 1980-81 there has been a 34 percent decline in the number of baccalaureate degrees conferred in engineering and a 47 percent decline in baccalaureate degrees conferred in disciplines related to the physical sciences by Missouri's public colleges and universities. In the life sciences, Missouri's public four-year institutions awarded the same number of baccalaureate degrees in academic year 1990-91 as were awarded in academic year 1980-81. While there has been a 32 percent increase in the number of baccalaureate degrees conferred in mathematics, the number in 1990-91 was only 141 out of the total of 14,566 baccalaureate degrees conferred.

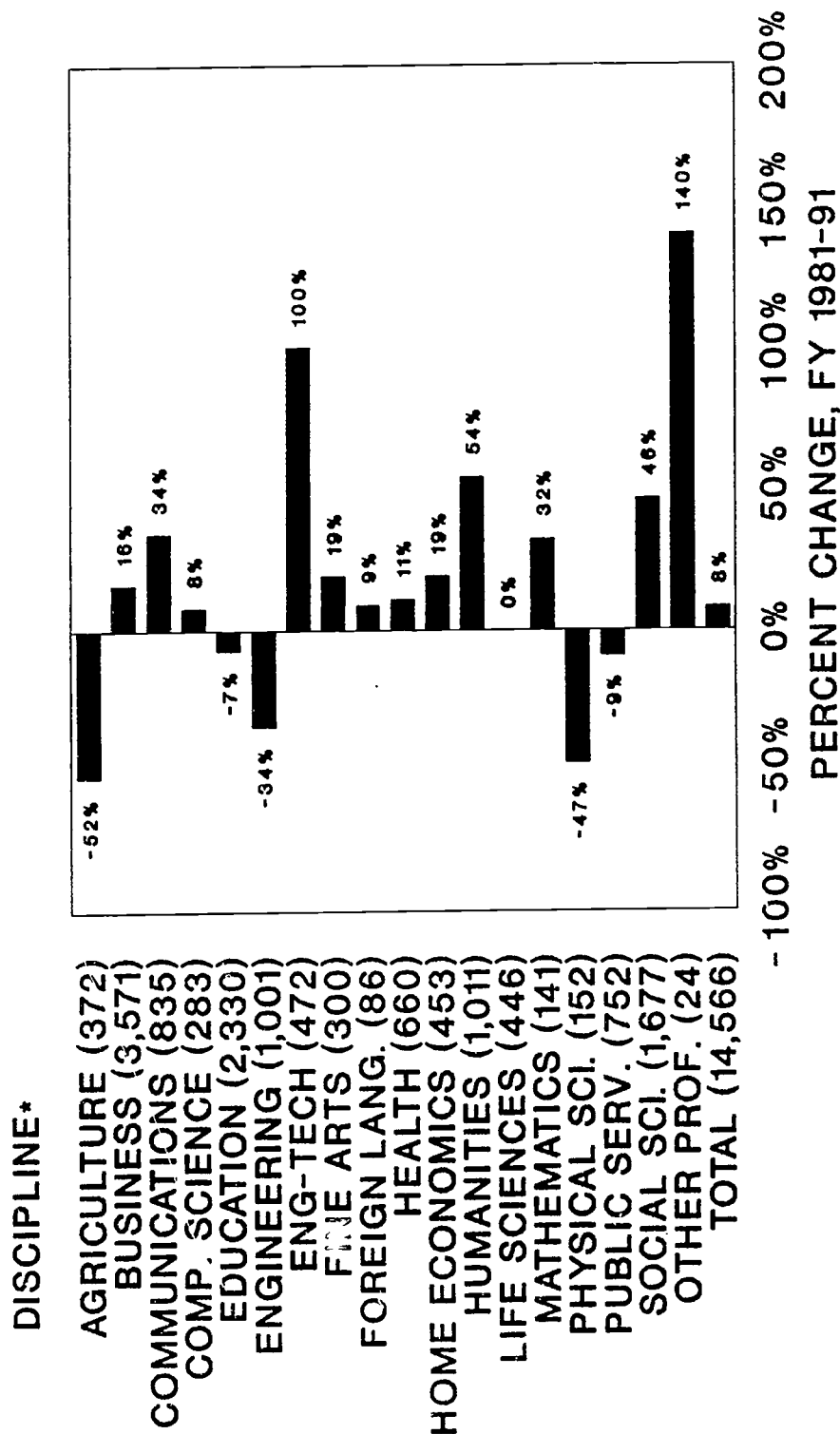
*The need for more
graduates in disciplines
critical to the state's
future*

When the data for the public baccalaureate degree-granting institutions are combined with the independent colleges and universities (Figure 11), the number of engineering baccalaureate degrees conferred statewide declined by 31 percent between academic year 1980-81 and 1990-91 (from 1,726 to 1,188), and there was a 47 percent statewide decline in the number of degrees conferred in the physical sciences (from 463 to 247). While the number of baccalaureate degrees conferred by the public four-year colleges and universities in the life sciences remained unchanged over the ten-year period, Missouri experienced a two percent decline in the number of degrees conferred statewide in the life sciences (from 736 to 720). There was a 20 percent increase statewide in the number of baccalaureate degrees conferred in mathematics. The total number of mathematics baccalaureate degrees conferred by Missouri's public and independent colleges and universities combined was, however, 247, or just one percent of the statewide total of 23,653 baccalaureate degrees conferred in academic year 1990-91.

Public Policy Questions and Perspectives

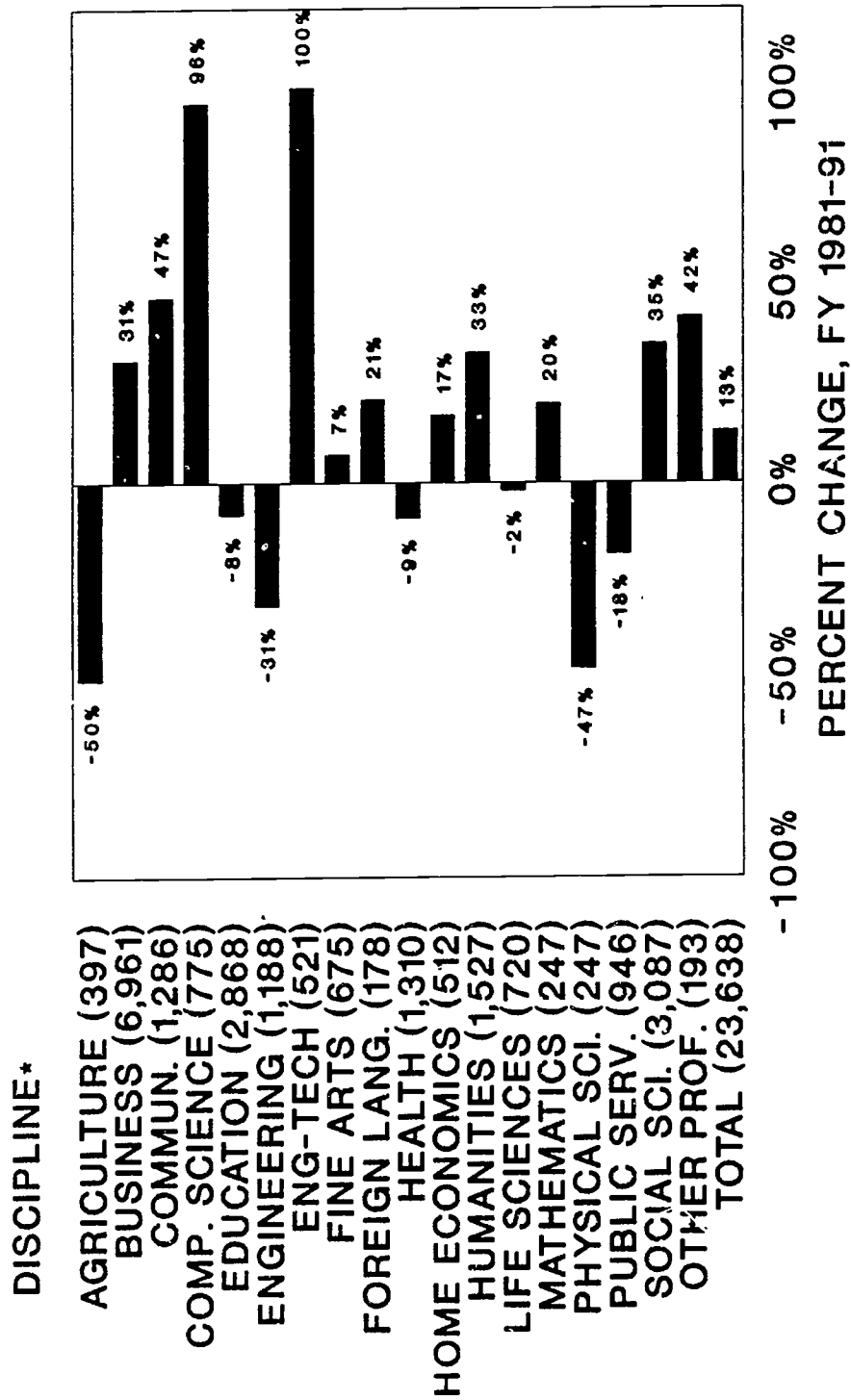
Strengthening graduate education and research will not be easy, but change is essential if Missouri is to meet the challenges in the

Figure 10
COMPLETIONS
PUBLIC INSTITUTIONS
TREND IN BACCALAUREATE DEGREES CONFERRED



*Number in parentheses indicates total baccalaureate degrees conferred in that category in FY 1991.

Figure 11
COMPLETIONS
PUBLIC AND INDEPENDENT INSTITUTIONS
TREND IN BACCALAUREATE DEGREES CONFERRED



*Number in parentheses indicates total baccalaureate degrees conferred in that category in FY 1991.

remainder of this decade and in the early 21st Century. Some important questions to consider include the following.

1. How does Missouri encourage more students to pursue baccalaureate and graduate degrees in such disciplines as foreign languages, life and physical sciences, mathematics, philosophy, and the humanities? Are these the right disciplines, or the only disciplines, that should be identified as being critical to Missouri's future?
2. What evidence or other criteria are needed as indicators that graduate education and research programs at Missouri's public and independent doctoral degree-granting and research universities are becoming stronger?

Mission and Strengthening Vocational/Technical Education

*Delivery of
vocational/technical
education is fragmented*

If Missouri is to keep manufacturing as a vital sector of its economy, it will need employees who are well-trained in the skilled trades. Needs assessments conducted in Missouri over the past few years have repeatedly demonstrated that Missouri has a serious shortage of people well-trained in the high-skill trades -- machinists, maintenance mechanics, tool and die makers, etc. -- the kinds of people needed to develop production facilities and keep them running. The introduction of microcomputers, robotics, and electronic controls as standard elements in manufacturing processes has made formal training in the skilled trades even more important. Yet, it has become increasingly difficult to provide such training through on-the-job-training (*An Assessment of Employer Needs*).

A critical issue facing Missouri, therefore, is the future of vocational/technical education since it has direct and immediate impact on workforce readiness. Currently, responsibility for these programs is spread throughout state government. The vocational/technical schools are under DESE; the community colleges are under DESE and CBHE; other job training programs are under Economic Development. Such fragmentation leads to duplication and a diffusion of resources and effort. Furthermore, if vocational and lower division postsecondary educational services are to be made available throughout the state, some type of cooperative network that is more effective than the present structure needs to be established among

the community colleges and the area vocational schools. A new structure for the delivery of vocational/technical education is an urgent need in Missouri.

Most of the associate degrees conferred in Missouri are granted by the community colleges and are typically in business and liberal studies rather than the various trades and technologies. The vocational and technical instruction the community colleges offer in the technologies, trades, and allied health is frequently delivered on-site at businesses and industries as continuing education in addition to their regular offerings on campus.

The role of the community colleges in addressing the needs for skilled workers in the high skill technologies and trades was succinctly stated in a joint report by Confluence St. Louis and Kansas City Consensus. This report stated that:

It is obvious that one of the most important aspects of economic development in Missouri is the continued ability of community colleges to provide training for business and industry. These institutions are uniquely suited to provide rapid and flexible training for all types of companies in a variety of areas. Many companies find their newly hired employees unable to deal with basic communication and computation. Community colleges can provide this training on campus, at the plant, or at a variety of high-technology areas. (*Competitive Edge: Investing in Higher Education for Missouri's Future*)

Missouri businesses and industries need better trained people for high-skill trades and technologies

A potential training ground for semi-skilled workers is the postsecondary area vocational/technical schools supervised by the Department of Elementary and Secondary Education. Unfortunately, the programs offered in these schools tend to be low-level technologies (carpentry, welding, auto mechanics, secretarial, practical nursing, etc.) rather than the more sophisticated technical programs that are needed and that are typically offered by a community college. There is, however, a need to link the vocational schools with the community colleges in a manner which will meet Missouri's needs for a skilled workforce in both the high and low technologies and trades.

Currently, Missouri does not have statewide coverage of postsecondary vocational and technical education or lower-division instruction as a result of the limits placed on the community colleges by their established service regions. As a consequence, many Missourians do

***Need for extended access
to basic educational
opportunities***

not have access to programs and services available through the existing twelve community college districts. Not only are many students without access to community college instruction, but many businesses and industries located outside existing community college districts are denied access to instructional and training support from Missouri's public two-year sector. Missouri's funding for its community colleges, much of which is local support from local tax levies, does not provide the incentives needed to the community colleges to provide instructional and training services outside their designated boundaries.

Policy Questions and Perspectives

Vocational/technical education is extremely important to Missouri in a number of ways. Businesses and industries rely on it to provide the skilled workforce that will keep them competitive. Missourians who are already working need these services to upgrade or acquire the new skills that will keep them employed. Further, the fifty percent of our high school students who are not college bound face what one observer has called a choice between "high skills or low wages." Strengthening these services requires that the following questions be addressed.

1. What policy initiatives are necessary to achieve a strengthened vocational/technical education system that will best serve the needs of Missouri's businesses and industries throughout the state for a highly skilled workforce and that will provide high wages for graduates with high skills?
2. Should the funding policies for Missouri's community colleges be revised to provide greater incentives for the community colleges to serve the needs of students, businesses and industries outside their service regions.

Mission and the Efficiency of Program and Administrative Operations

In many respects, much of the earlier discussion regarding access relates to the issue of efficiency, particularly those issues pertaining to low graduation rates after six years and relatively high attrition rates between the freshman and sophomore years. There are, how-

ever, two other pressing issues related to institutional efficiency: duplicative program offerings and increasing numbers of administrative personnel.

Program Operations and Duplication

Although duplication has been a much discussed issue throughout the history of state coordination, only recently -- as the competition for resources has intensified and the pressure to be more competitive has increased -- have states begun to deal seriously with the issue by asking hard questions about duplication and collecting the necessary information to address these questions. The duplication of academic programs would seem to be a relatively simple matter to identify and resolve, e.g., those programs offered by two or more institutions, but it is in fact a very complex problem that requires a substantial amount of data to address.

Eliminating unnecessary duplication

The mere fact that a given degree program may be offered by several institutions is by itself no cause for concern. Questions tend to arise about apparent duplication when demand is insufficient, when state resources are insufficient or are perceived to be used inefficiently, when a critical mass of students or faculty is sufficiently lacking to raise doubts about programmatic quality, or when the program is inappropriate to the mission of one or more of the sponsoring institutions, e.g., associate degrees at certain four-year institutions. Furthermore, even if duplication seems to exist, important mitigating considerations are whether such programs are central to the mission of the institution, e.g., the arts and sciences, and whether the needs of special populations such as women, minorities, or nontraditional age adults are met by one or more of the duplicative programs. Finally, once a decision is made to resolve an instance of duplication, it is desirable to determine both whether suitable alternative means of instructional delivery are available and the relative quality of the competing programs so that only the weaker programs will be identified for termination.

Duplication is a very difficult problem to remedy once it exists. There are no quick fixes. The old adage, "An ounce of prevention is worth a pound of cure," is quite apropos to this issue. Once programs are established and investments are made, the reversal of those decisions is problematic and usually occurs only in incremental steps. In this regard it is important to note that program growth usually occurs incrementally, too. Only rarely are new programs started from the

ground up; typically, new courses are added in related areas one or two at a time to respond to student or faculty interests until a new program becomes feasible. Then, new programs tend to lead to new departments, and new departments tend to lead to new divisions or colleges within the institution. Higher education institutions, thus, tend to grow by accretion. As a consequence, when they become too large or too inefficient, i.e., "overweight," the process of down-sizing tends to be a gradual one like weight loss -- except in extreme or unusual circumstances.

Using the public four-year institutions as an example of how some of these duplication issues could unfold, Table 4 shows the number of baccalaureate degrees awarded during academic year 1989-90 by broad degree program areas. In reviewing the data in Table 4, it is important to note that the very essence of a collegiate institution is built around a core set of disciplines in arts and sciences, and selected offerings in applied and professional areas. Concerning the arts and sciences, every college or university, by definition, should normally offer a core set of courses in the humanities, natural sciences, mathematics, and the social and behavioral sciences. While these categories historically include a variety of specific disciplines in the arts and sciences, it is not necessarily essential, nor is it critical, that every institution offer a **major** in every discipline; however, it can be assumed that most institutions will offer general education courses in a variety of areas.

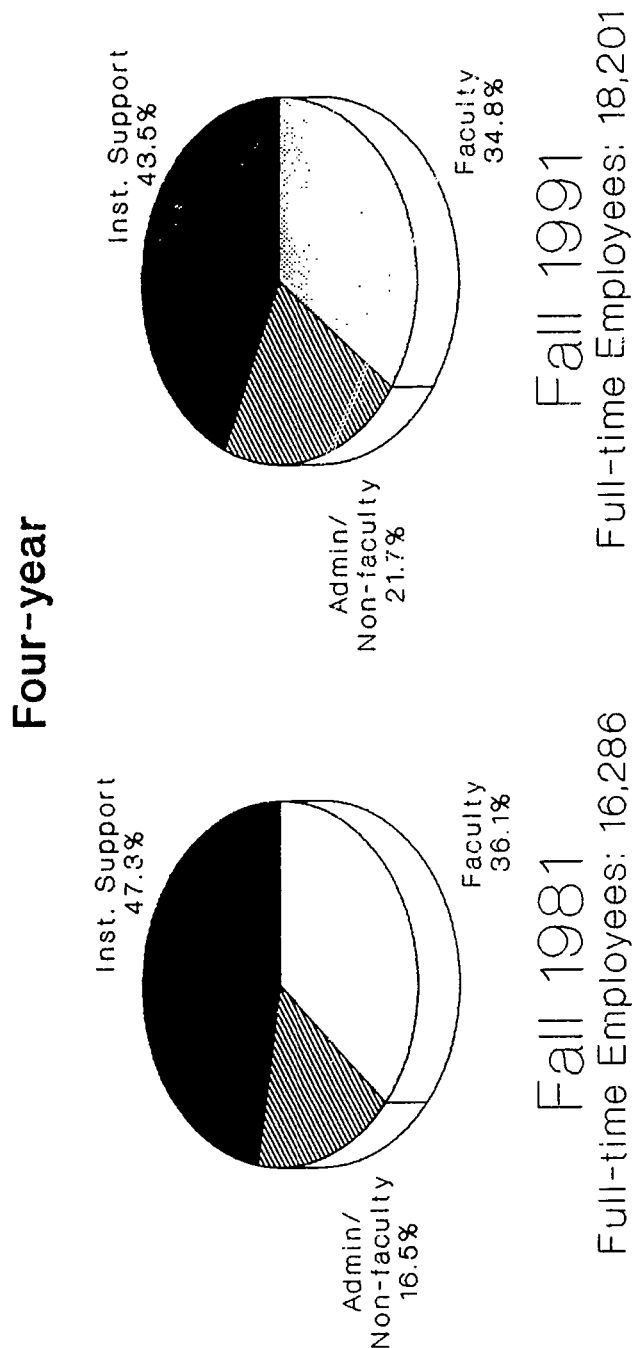
*Selectivity in the breadth
of majors offered*

Issues of program duplication, therefore, will involve questions about the need for a particular degree program at an institution as well as the necessity for the breadth of current offerings within a given discipline. While this is true for all programs, it is particularly important in the applied and professional areas. For example, as shown on Table 4, most institutions offer baccalaureate programs in business and education; in order to avoid duplication and the dilution of resources and talent, institutions should be selective in the number of specializations they offer in these as well as other disciplines. Further, they should be selective in the students admitted to high volume programs such as business and education.

Table 4
Baccalaureate Degrees Conferred by Discipline Area, 1989-90

	Harris-Stowe	Missouri Southern	Missouri Western	Central MSU	Northwest MSU	Southwest MSU	South MSU	North MSU	Lincoln University	UM-Columbia	UM-Kansas City	UM-Rolla	UM-St. Louis	Total Public 4-yr
	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Agribusiness	0	0	0	18	21	17	20	0	8	52	0	0	0	136
Agri. Science	0	0	9	0	17	17	21	33	0	120	0	0	0	217
Ren. Natural Resources	0	0	0	0	0	0	18	0	0	41	0	0	0	59
Arch/Environmental Design	0	0	0	5	0	0	6	0	0	0	0	0	0	11
Area/Ethnic Studies	0	0	0	0	0	0	2	0	0	5	0	0	0	7
Business & Management	0	177	117	322	171	269	519	262	85	620	326	0	750	3,618
Business & Office	0	0	0	12	5	15	9	0	3	0	0	0	0	44
Marketing & Distribution	0	0	0	1	0	0	0	9	10	0	0	0	0	20
Communications	0	15	0	100	58	68	189	38	6	287	56	0	0	817
Communications Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Computer & Information Science	0	15	17	12	18	31	21	37	0	44	20	57	37	309
Consumer/Personal Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	42	143	96	274	155	296	399	193	43	399	206	0	232	2,478
Engineering	0	0	0	0	2	0	0	0	0	413	0	652	0	1,067
Engineering Technology	0	0	8	187	26	36	104	53	7	0	0	0	0	421
Foreign Languages	0	0	0	3	2	5	4	6	0	16	7	0	23	66
Allied Health	0	0	2	1	9	9	10	0	0	74	28	0	0	124
Health Sciences	0	25	41	36	1	40	31	50	0	126	93	0	71	514
Home Economics	0	0	0	33	27	75	57	30	1	185	0	0	0	408
Vocational Home Economics	0	0	0	0	0	0	58	0	0	0	0	0	0	58
Industrial Arts	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Letters	0	9	10	22	12	11	19	97	3	151	32	6	104	476
Liberal Arts/General Studies	0	14	0	0	0	87	0	0	0	41	43	0	35	220
Library Science	0	0	0	0	1	0	0	0	0	4	0	0	0	5
Life Sciences	0	23	11	24	23	20	53	48	4	87	104	10	29	436
Mathematics	0	2	0	2	5	12	17	13	4	17	13	10	9	113
Military Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Military Technology	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Multidisciplinary	0	0	5	0	0	14	8	0	0	68	1	0	0	96
Parks & Recreation	0	0	20	11	11	0	40	3	0	40	0	0	0	125
Basic Skills	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citizenship/Civics	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Health-Related Activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interpersonal Skills	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leisure & Recreation	0	0	0	0	0	8	0	0	0	0	0	0	0	8
Personal Awareness	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Philosophy/Religion	0	0	0	0	0	5	13	5	3	5	6	0	5	42
Theology	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Sciences	0	6	9	10	8	17	27	8	5	31	17	17	16	171
Science Technology	0	0	0	0	0	0	5	0	0	0	0	0	0	5
Psychology	0	14	23	34	19	46	73	40	3	110	63	9	80	514
Protective Services	0	23	32	116	0	49	0	40	25	0	22	0	42	349
Public Affairs	0	0	20	31	0	32	46	0	2	31	0	0	50	212
Social Sciences	0	4	28	48	53	44	100	52	14	272	71	31	91	828
Construction Trades	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mechanics/Repair	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Precision Production	0	0	2	55	0	0	0	0	0	0	0	0	0	57
Transportation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visual/Performing Arts	0	8	13	27	27	12	52	18	3	52	47	0	15	274
Total	42	498	472	1,384	660	1,237	1,921	1,035	229	3,291	1,155	792	1,589	14,305

Figure 12
Number of Full-time Employees by
Occupational Activity, Public
Institutions, Fall 1981 and Fall 1991



Source: Equal Employment Opportunity
Commission Survey (EEO6)

Public Policy Questions and Perspectives

Several public policy questions and perspectives revolve around the issues of program effectiveness and program duplication. Some of these include the following.

1. What constitutes unnecessary or inappropriate duplication of programs from the state-level perspective, particularly in the applied and professional areas?
2. What criteria should be used by institutions to evaluate which programs should be emphasized, maintained at current level, reduced, or eliminated?
3. If it is important that Missourians have access to a comprehensive array of baccalaureate programs somewhere, but not necessarily everywhere, what **criteria** should be used and/or developed for making decisions regarding where programs should be offered and which institutions should offer them?

Efficiency of Administrative Operations

Colleges and universities exist to provide instruction at the higher education level, perform research, and provide public service. Institutions of higher education do not exist for the purpose of administering state and federal programs, rules and regulations. While it is important that institutions be effectively administered, the administration of institutions cannot become an end in and of itself. Colleges and universities must be about the business which is central to their missions.

In recent years, however, the rise in the proportion of employees on college and university campuses designated as being administrative and non-faculty has been a cause for concern. Within Missouri's public four-year sector, the proportion of administrative and non-faculty staff increased from 16.5 percent of all employees in Fall 1981 to nearly 22 percent in Fall 1991 (Figure 12). In the same period, the proportion of faculty decreased from 36.1 percent of the total to 34.8 percent. As a consequence, the ratio of **new** administrators hired to **new** faculty hired was almost 3 to 1. This trend is not only occurring in Missouri, but it has become a national phenomenon. The trend is so pervasive across the nation that the legislative and higher education leadership attending the November 1991 Western Higher Education Conference challenged American colleges and univer-

*Greater efficiency in
administrative
operations needed*

sities to evaluate all positions associated with an institution in terms of the following question: "How does this position or function serve to promote the **mission** of the college or university?"

Public Policy Questions and Perspectives

While striving for effectiveness in administrative operations is a noble goal, the data suggest that increases in administrative and non-faculty assignments in Missouri's public four-year colleges and universities run counter to the state's goals for improvement in the institutions' performance in instruction, research and public service. Fulfilling the mission of our institutions is primarily the activity of faculty, not administrative and non-faculty staff. This discussion suggests that the following questions regarding the efficiency of institutional mission implementation should be considered.

1. What is an appropriate balance between the proportion of administrative and non-faculty costs on a campus compared to the proportion of faculty costs?
2. What policies are appropriate to encourage the reduction of costs in administration and non-faculty staff?

Mission and Accountability to the People of the State

The concept of accountability is perhaps as elusive as the concept of quality. Questions concerning why to engage in assessment, what factors should be measured, and to whom findings should be reported often complicate discussions about institutional accountability. While accountability means different things to different people, in essence it should result in concise, easy to understand evidence that institutions are successful at achieving their objectives. Further, it is essential that institutions demonstrate that they are using the results of assessment to improve teaching and learning on their campuses. If higher education is to recapture the public trust, institutions individually and the system collectively must become more visibly oriented toward accountability, demonstrating in objective terms the benefits conferred to students and to the public at-large.

***Recapturing the public's
trust***

There is, however, no single index of accountability, nor is there agreement on what constitutes appropriate multiple measures. Senate Bill 353, the impetus for last year's Proposition B, included eleven different measures of accountability:

- student retention and graduation rates;
- percent of students meeting admissions requirements;
- success of remediation programs;
- measurable communication skills, including writing, speaking, and critical thinking;
- percent of students attending graduate or professional schools;
- demonstrated student achievement through the use of standardized testing;
- employer satisfaction;
- student access and study body composition;
- support from service area community of interest;
- implementation of state goals in operational terms; and
- measures of success at meeting institutional functional emphases.

In addition, the Coordinating Board has adopted a series of performance indicators which are yet to be fully implemented. (See Appendix 5 for a listing of the CBHE's statewide performance indicators.) Thus, while several accountability models have been developed and are available for emulation, no institution has developed a full accountability system that has been routinely reported to the public.

Institutional accountability is not, however, just an issue at the state level. Public Law 101-542, which is known as the Student-Right-to-Know and Campus Security Act, is a new federal law that requires postsecondary institutions to begin reporting to prospective students (and in some cases to the federal government) historical graduation rates for degree-seeking students. Title I, Section 103 of the Act requires institutions to report to prospective students the overall graduation/completion rates of full-time, degree-seeking, undergraduate students. Title I, Section 104 requires institutions providing athletic-related student aid to report to prospective student athletes, coaches, guidance counselors, and the U.S. Secretary of Education graduation rates for student athletes **compared to overall graduation rates, broken down by gender, ethnicity, and sport**. The institution's policy statement on campus security and statistics on the incidence of selected crimes on campus are to be made available to prospective students, current students, and employees as required by Title II of the Act.

*Student Right-to-Know
and Campus
Security Act*

More progress needed in assessment programs

It is clear that both the states and the nation have a vital interest in the performance of schools, colleges and universities, and it is difficult to imagine that this interest will soon disappear. The data and other information reported herein indicate that Missouri's public four-year institutions are able to provide evidence on some of the accountability measures identified in Senate Bill 353 and required by the federal government. On other measures, however, progress is still needed. Table 5 shows the number, as well as percent, of 1989-90 baccalaureate degree recipients, by institution, who were given a general education assessment prior to graduation. Of these degree recipients, only 46 percent of the 1989-90 baccalaureate graduates for whom data were provided were given such an assessment.

The number of 1989-90 baccalaureate degree recipients who were given a nationally normed exit examination in their major field of study prior to graduation is shown on Table 6. All institutions except one were able to provide these data to the Coordinating Board for Higher Education. The available evidence suggests that, four years after the formal implementation of institutional assessment plans in 1987, assessment programs in these areas are just now taking root at many institutions. Comparable data for the public two-year and the independent sectors were not requested at the time these data on the public four-year institutions were requested. Other information on the two-year institutions indicates that a substantial amount of assessment of student preparation and learning ability occurs at matriculation, but other forms of assessment are still in a developmental phase at many institutions. The capabilities of the independent institutions are unknown at this time. However, since the regional accrediting association has mandated assessment activities at all of its institutions, it is assumed that comparable programs are under development in this sector as well.

Public Policy Questions and Perspectives

The need for institutional accountability to regain and sustain the public trust is clear. The mandate for more accountability will remain for many years to come; indeed, it is becoming increasingly institutionalized as the regional accrediting agencies include it in their expectations of institutional performance. As states and institutions move to become more accountable, certain questions of public policy must be addressed, including such questions as the following.

1. What measures are appropriate as indicators of program quality, in addition to the nationally normed tests that are currently being used?
2. Should the accountability measures that were included in Senate Bill 353 be incorporated into the CBHE's performance indicators? What other steps may be warranted to strengthen the system's accountability structures?
3. To what extent should there be academic or financial incentives to reward institutions that achieve stated objectives?

Table 5
General Education Assessment of 1989-90 Baccalaureate Degree Recipients

	General Education Assessment														Total			
	Harris-Stowe	Missouri Southern	Missouri Western	Central MSU	Northwest MSU	Southeast MSU	Southwest MSU	Northeast MSU	Lincoln University	UM-Columbia	UM-Kansas City	UM-Rolla	UM-St. Louis	Public 4-year				
Number assessed	42	277	44	274	1,104	602	0	1,028	N/A	N/A	1,128	1,988	53	6,540				
Assessed by nationally-normed tests	29	277	44	274	688	169	N/A	897	N/A	N/A	1,128	1,272	53	4,831				
Number Assessed by Other Means	13	0	0	0	416	433	N/A	7	N/A	N/A	0	716	0	1,585				
Number not assessed	0	221	481	1,110	N/A	635	N/A	131	N/A	N/A	55	67	652	3,352				
	General Education Assessment														Total			
	Harris-Stowe	Missouri Southern	Missouri Western	Central MSU	Northwest MSU	Southeast MSU	Southwest MSU	Northeast MSU	Lincoln University	UM-Columbia	UM-Kansas City	UM-Rolla	UM-St. Louis	Public 4-year				
Number assessed	100%	56%	9%	20%	169%	49%	0%	99%	0%	0%	99%	251%	3%	46%				
Assessed by nationally-normed tests	69%	56%	9%	20%	105%	14%	0%	87%	0%	0%	99%	161%	3%	34%				
Number Assessed by Other Means	31%	0%	0%	0%	64%	35%	0%	1%	0%	0%	0%	90%	0%	11%				
Number not assessed	0%	44%	102%	80%	0%	51%	0%	13%	0%	0%	5%	8%	41%	24%				
Footnote: Multiple assessments of students results in some percentages exceeding 100 percent.																		

Footnote: Multiple assessments of students results in some percentages exceeding 100 percent.

Table 6
Exit Assessment in the Major of Baccalaureate Degree Recipients, Academic Year 1989-90

Program	Number of Bachelor Degrees Conferred	Degree Recipients Scoring by Quartile on National Test				Percent				Assessed				Percent			
		0-25%	26-50%	51-75%	76-100%	Assessed by National Test	Assessed by National Test	Assessed by National Test	Assessed by Other Means	Percent Assessed	Not Assessed	Percent Assessed	Not Assessed	Percent Assessed	Not Assessed	Percent Assessed	Not Assessed
Total of All Degree Programs	42	0	0	0	0	0	0	0	0	0%	0	0%	42	0%	42	100%	0
Harris-Stowe State College	498	55	47	51	57	210	42%	42%	99	62%	189	38%	189	62%	189	38%	0
Missouri Southern State College	472	4	20	25	29	78	17%	17%	162	51%	232	49%	232	51%	232	49%	0
Missouri Western State College	1,384	67	104	88	95	354	26%	26%	852	87%	178	13%	178	87%	178	13%	0
Central Missouri State University	660	0	0	29	6	236	36%	36%	27	40%	397	60%	397	40%	397	60%	0
Northwest Missouri State University	1,237	6	19	35	29	89	7%	7%	216	25%	932	75%	932	25%	932	75%	0
Southeast Missouri State University	1,921	1	4	18	9	32	2%	2%	147	9%	1742	91%	1742	9%	1742	91%	0
Southwest Missouri State University	1,035	81	158	271	374	884	85%	85%	109	96%	42	4%	42	96%	42	4%	0
Northwest Missouri State University	229	17	53	13	3	86	38%	38%	0	38%	143	62%	143	38%	143	62%	0
Lincoln University	3,291	0	0	0	0	0	0%	0%	0	0%	3291	100%	3291	0%	3291	100%	0
University of Missouri-Columbia	1,155	83	158	171	201	613	53%	53%	305	79%	237	21%	237	79%	237	21%	0
University of Missouri-Kansas City	792	3	38	28	38	107	14%	14%	649	95%	36	5%	36	95%	36	5%	0
University of Missouri-Rolla	1,589	N/R	N/R	N/R	N/R	943	59%	59%	87	65%	559	35%	559	65%	559	35%	0
University of Missouri-St. Louis	14,305	317	601	729	841	3,632	25%	25%	2,653	44%	8,020	56%	8,020	44%	8,020	56%	0
Total Public Four-Year																	

III. Funding Policies

Tuition and Required Fees

No one involved in higher education, whether that person is a student, parent, faculty member, institutional or statewide governing or coordinating board member, or elected official can escape concern regarding the rising cost of higher education. As noted in Figure 13, the percentage of the state's general revenue budget dedicated to higher education peaked in FY 1977 at 18.7 percent and reached a low of 14.3 percent in FY 1985 and FY 1989. This situation is not unique to Missouri; all states have been experiencing increasing demands to fund state services other than education as well as to finance programs which have been shifted from the federal government to state governments.

*Tuition and fees
increase while the state's
share of budget decreases*

As a consequence of this decline in higher education's proportionate share of the state's budget, tuitions and fees have increased quite dramatically in recent years. Tables 7 and 8 show resident undergraduate tuition and required fees for public research universities and state colleges and universities located in the Midwestern states and in those states contiguous to Missouri. In each case, Missouri's public institutions are below the national average both in terms of cost and in terms of the annual rate of change. Comparable data for Missouri's public two-year institutions indicate similar trends. Notwithstanding Missouri's rankings on student charges, the amount of money it costs students and parents remains significant. Of course, average tuition at the state's independent institutions is several times the level of the public four-year institutions.

Public Policy Questions and Perspectives

The issue of funding was addressed at length by those attending the November 1991 higher education conference sponsored by the Pew Higher Education Research Program and WICHE. There are several public policy issues related to student charges the western states are pursuing, and these matters are not unlike those which need to be addressed in Missouri. Some of these questions include the following.

1. What are the alternatives to raising tuition as a means to generate needed revenues?
2. How much of the cost of higher education should the student and/or family bear?
3. Should state tuitions be raised for those who can afford more, so that more funds are available for students who have greater financial need?

State Appropriations

State funding policies for higher education have generally considered the direct relationship which exists between state appropriations, tuition and fees, and student financial aid. Historically, as the rate of increase in state support declines, the rate of increase in tuition and student financial aid has increased. The reverse has been true as well: as states have been able to raise state support, the rate of increase demanded by institutions from tuition and student financial aid has declined. Unfortunately, however, from one source or another, colleges and universities have continued to raise more money in absolute dollars and spend all the money they can raise in an attempt to meet expanding needs and rising aspirations. Questions are now being asked about the wisdom of unmanaged enrollment and the start-up of new programs that can only be provided by increasing total university costs.

As a consequence, states are exploring various funding policies which concentrate existing resources and target new funds on key priorities and critical needs, similar to the Coordinating Board's "Funding Results" component of its FY 1993 budget request. Many such initiatives are related to enhancing institutional performance by narrowing the focus of each institution's aspirations for expansion of enrollments and programs.

During the 1970s many states instituted funding formulas for higher education which were intended to provide a rational and predictable basis for institutional budgeting. In recent years as state revenue shortfalls and other state priorities led to decreasing proportional spending on higher education to accommodate the needs of other state services, states were no longer able to appropriate the amount of funds needed. In addition, many of the formulas that were enrollment driven were revised to reflect more appropriately public

Funding policies should be fair, rational and predictable

Figure 13
Higher Education's Percent
of General Revenue

FISCAL YEAR

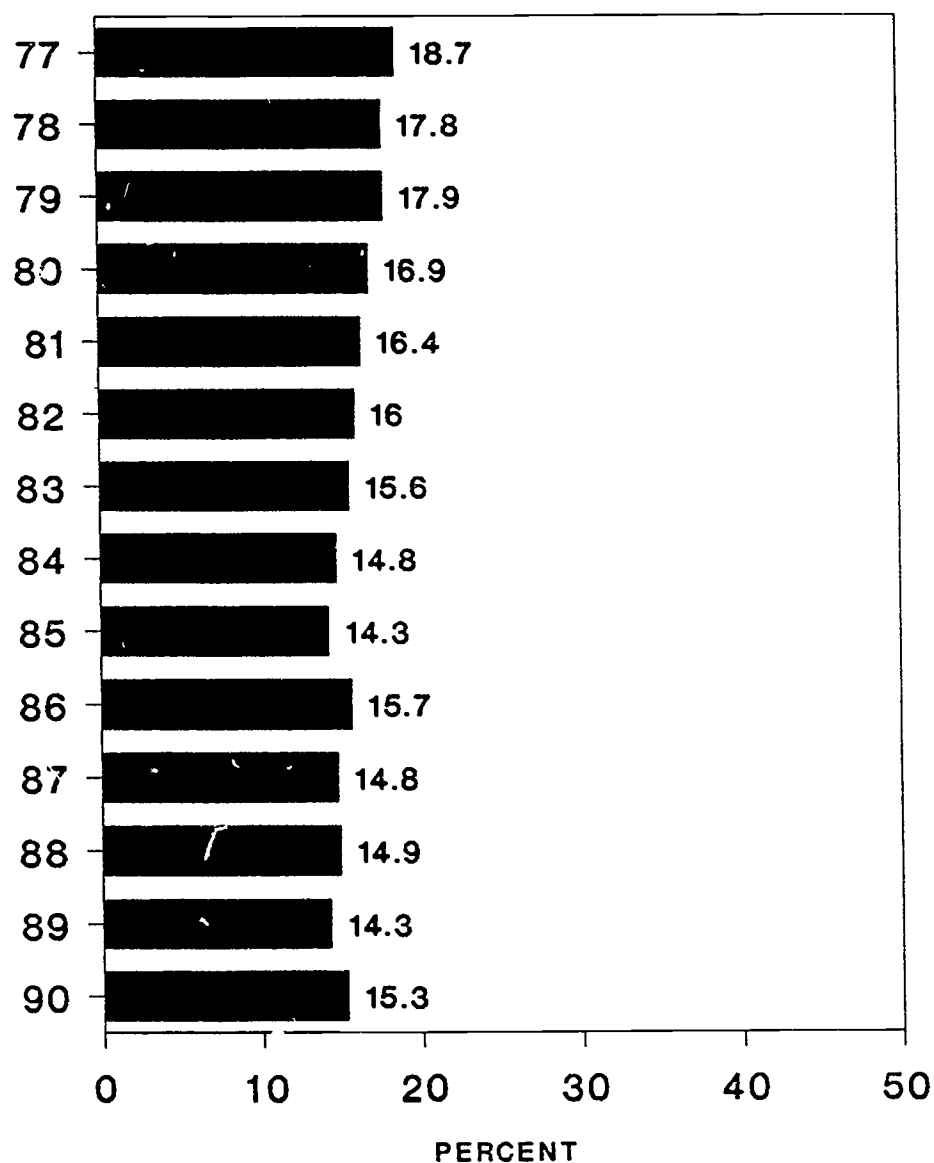


Table 7

RESIDENT UNDERGRADUATE TUITION AND REQUIRED FEES ACADEMIC YEARS 1985-86 AND 1990-91						
PUBLIC RESEARCH UNIVERSITIES						
State	1990-91 Amount	Group Rank	1985-86 Amount	Group Rank	Annual Rate of Change	Group Rank
Proposed Midwest Compact States						
Michigan*	\$3,620	1	\$2,359	1	8.9%	2
Illinois	2,990	2	1,967	3	8.7%	3
Minnesota*	2,728	3	2,109	2	5.3%	11
Ohio	2,343	4	1,704	4	6.6%	7
Indiana	2,220	5	1,660	5	6.0%	9
Nat'l Avg.	2,151	6	1,476	7	7.8%	5
Wisconsin	2,107	7	1,390	10	8.7%	4
North Dakota	2,040	8	1,167	13	11.8%	1
Missouri*	1,981	9	1,457	8	6.3%	8
Nebraska	1,915	10	1,512	6	4.8%	13
Iowa	1,900	11	1,304	11	7.8%	6
South Dakota	1,880	12	1,432	9	5.6%	10
Kansas	1,564	13	1,230	12	4.9%	12
Missouri and Contiguous States						
Illinois	\$2,990	1	\$1,967	1	8.7%	4
Nat'l Avg.	2,151	2	1,476	3	7.8%	5
Missouri*	1,981	3	1,457	4	6.3%	8
Nebraska	1,915	4	1,512	2	4.8%	10
Iowa	1,900	5	1,304	5	7.8%	6
Kentucky	1,710	6	1,228	7	6.8%	7
Tennessee	1,676	7	1,092	8	8.9%	3
Arkansas	1,598	8	930	9	11.4%	2
Oklahoma	1,574	9	858	10	12.9%	1
Kansas	1,564	10	1,230	6	4.9%	9

*Average of lower and upper division charges.

Source: 1990-91 Tuition and Fee Rates: A National Comparison. Higher Education Coordinating Board, State of Washington, March 1991

Table 8

RESIDENT UNDERGRADUATE TUITION AND REQUIRED FEES ACADEMIC YEARS 1985-86 AND 1990-91 STATE COLLEGES AND UNIVERSITIES						
State	1990-91 Amount	Group Rank	1985-86 Amount	Group Rank	Annual Rate of Change	Group Rank
Proposed Midwest Compact States						
Ohio	\$2,524	1	\$1,756	4	7.5%	1
Illinois	2,217	2	1,424	3	9.3%	9
Michigan	2,172	3	1,477	1	8.0%	12
Indiana	2,107	4	1,548	5	6.4%	5
Iowa	1,900	5	1,242	11	8.9%	2
Minnesota	1,889	6	1,519	2	4.5%	13
Wisconsin	1,829	7	1,304	10	7.0%	4
Nat'l Avg.*	1,734	8	1,202	7	7.6%	8
South Dakota	1,686	9	1,324	9	5.0%	7
North Dakota	1,659	10	1,031	13	10.0%	3
Kansas	1,451	11	1,142	12	4.9%	6
<i>Missouri</i>	<i>1,425</i>	<i>12</i>	<i>958</i>	<i>8</i>	<i>8.3%</i>	<i>10</i>
Nebraska	1,421	13	1,029	6	6.7%	11
Missouri and Contiguous States						
Illinois	\$2,217	1	\$1,424	1	9.3%	7
Iowa	1,900	2	1,242	5	8.9%	1
Nat'l Avg.*	1,734	3	1,202	3	7.6%	6
Kansas	1,451	4	1,142	6	4.9%	5
<i>Missouri</i>	<i>1,425</i>	<i>5</i>	<i>958</i>	<i>4</i>	<i>8.3%</i>	<i>9</i>
Nebraska	1,421	6	1,029	2	6.7%	10
Tennessee	1,415	7	929	8	8.8%	4
Kentucky	1,353	8	954	7	7.2%	8
Arkansas	1,343	9	828	9	10.2%	2
Oklahoma	1,198	10	604	10	14.7%	3

*Does not include Alaska, Delaware, Hawaii, and Wyoming

Source: 1990-91 Tuition and Fee Rates: A National Comparison. Higher Education Coordinating Board, State of Washington, March 1991

policies associated with quality and performance rather than enrollment growth.

As the data show in Figure 13 and Tables 7 and 8, funding patterns in Missouri are not dissimilar to those in other states in terms of declining state support for higher education and increasing demands placed upon students for tuition and fee revenue. Each of these developments is the result of one group making decisions about appropriations while another group determines the amount needed from tuition and fees to meet each institution's expenses. The funding decisions are independent of each other and are not framed within any context related to a rational and predictable funding policy. In addition, the decisions tend to exist within the context of "survival" rather than focusing on the achievement of state goals with respect to institutional mission and overall improvement in quality and performance of teaching and learning.

*Funding trends in
Missouri similar to
trends in other states*

Public Policy Questions and Perspectives

Missouri obviously needs an acceptable funding policy for higher education which will serve well the present and immediate future needs of the state and its institutions. In the development of funding policies that address our current challenges, certain questions arise that require attention. These questions include the following.

1. What combination of capitation grants and incentive appropriations would encourage greater institutional success in achieving the state's goals for higher education?
2. What are the issues associated with the use of incentive funding to promote improvement in institutional performance? Improved student achievement? Improved retention and graduation rates?
3. What kinds of strategies can Missouri initiate to encourage the increased participation of underrepresented populations in Missouri's system of higher education?
4. How can institutions effectively demonstrate accountability in their use of state dollars in meeting the state's goals for higher education?

5. Is it feasible or even wise for Missouri to establish a joint state and institutional bonding authority to help finance the renovation and repair of buildings and to acquire state of the art equipment? Are there any other alternatives to raising resources for this purpose?
6. What changes, if any, should be made in Missouri's financial aid programs to encourage better student preparation and collegiate performance and to increase student choice?

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IV. Governance

Missouri's legal structure for its system of higher education is one that tries to strike a balance between central coordination and institutional autonomy. In most instances the institutional governing boards are able to speak the last word on any given subject, but in the area of statewide planning the Coordinating Board has a very clear statutory mandate. The CBHE, as a statewide, constitutional board, is responsible for developing "a coordinated plan for higher education in the state" based upon the "higher education needs in the state" of the citizens, businesses, industries, and the professions. (The CBHE's current constitutional and statutory powers can be found in Appendix 6.)

Criteria for Effective Coordination

If there is one criterion for effective statewide coordination, it has been a board's ability to identify and find answers to crucial questions regarding the attainment of those statewide goals which can be best achieved by the state's public and independent colleges and universities.

Regardless of the type of governance structure in place, the system of higher education must function with increased clarity of purpose and a clear focus on maintaining the integrity of the system. The tendency for American institutions of higher education to grow without clear intent was noted as early as 1936 by one of the great educational leaders of the twentieth century, Robert M. Hutchins. He wrote,

The most striking fact about higher learning in America is the confusion that besets it. . . . Up to the onset of the present depression it was fashionable to call for more and more education. Anything that went by the name of education was a good thing just because it went by that name. I believe that the magic of the name is gone and that we must now present a defensible program if we wish to preserve whatever we have that is of value. . . . {U}niversities . . . should have an educational policy and then try to finance it, instead of letting financial accidents determine their educational policy.

Balancing institutional interests and achieving statewide goals

Making governance work for Missouri

Hutchins' words speak directly to the situation today. Financial constraints on public and independent institutions are increasing. At the same time, the pressures to be all-things to all people are as great as ever. Given such circumstances, there is a tendency to focus almost entirely on the financial aspects of the enterprise and to look for a "quick fix" that will immediately affect the bottom line. Certainly, the maintenance of financial resources is essential to keep the system operating, but students, institutions, and society are done a grave disservice if the focus is only on a financial balance sheet. The temptation is to fall back on the familiar patterns of growth and expansion to "solve" problems. These kinds of solutions merely postpone effective change and disguise fundamental failties in an institution and a system of higher education. They should not be permitted to detract from the fundamental need to restructure the system, with the goal of enhancing the quality of Missouri's system of higher education.

But restructuring Missouri's system of higher education does not mean, necessarily, that a restructuring of its present system of governance is needed. A review which may lead to a restructuring of public policies, institutional missions, funding policies and policy initiatives is, however, warranted. This CBHE Task Force on Critical Choices for Higher Education has the opportunity to show Missouri that the existing structure of governance can and will work to meet the state's needs for higher education. If the Task Force is not able to accomplish this, then it may be that Missouri does need a new form of governance.

This overview of the mission of Missouri's public and independent colleges and universities in terms of the students served, programs offered, and costs to students demonstrates how the current higher education policies in Missouri are fragmented and may not be serving Missouri as well as they should. As a consequence, now is the time for the CBHE Task Force on Critical Choices for Higher Education to join with the Coordinating Board in designing a new vision of the future: a vision for a system of higher education which builds upon the strengths of the past and anticipates the challenges of the future.

Public Policy Questions and Perspectives

The challenge to the Coordinating Board's Task Force on Critical Choices for Higher Education is to demonstrate that Missouri's

current system of decentralized governance can work. The extent of decentralization in this system has been documented in a recent study done of the governance of higher education in 16 European countries and 25 states. That study reported that Missouri was ranked the third most decentralized system. While decentralized management of institutions and corporations has led to greater flexibility in response to change, some form of centralized policy development and planning for the system, or the corporation, as a whole has merit and is usually necessary. A key issue for Missouri, as well as all other states, is to attain an appropriate balance between these competing forces. Questions to be considered include the following.

1. Is the current balance of central coordination and institutional autonomy appropriate?
2. What evidence supports the effectiveness of the current system? What evidence suggests change is desirable?

V. Appendices

Appendix 1

National Education Goals

In 1990, six National Education Goals were promulgated by the President and the state governors to improve America's system of education. These goals are as follows.

Readiness for School

Goal 1: By the year 2000, all children in America will start school ready to learn.

High School Completion

Goal 2: By the year 2000, the high school completion rate will increase to at least 90 percent.

Student Achievement and Citizenship

Goal 3: By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning and productive employment in our modern economy.

Science and Mathematics

Goal 4: By the year 2000, U.S. students will be first in the world in science and mathematics achievement.

Adult Literacy and Lifelong Learning

Goal 5: By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to complete in a global economy and exercise the rights and responsibilities of citizenship.

Safe, Disciplined and Drug-Free Schools

Goal 6: By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

Appendix 2

Guidelines for a Statewide Core High School Curriculum Requirement

1. The presidents of all Missouri public four-year colleges and universities will work with their faculties and boards to establish a minimum core requirement for general admission to college. The core will minimally involve 16 units (1 unit = 1 year in class) as follows:

English - 4 units, one of which may be speech or debate; 2 units emphasizing composition or writing skills are required;

Mathematics - 3 units (high school level algebra and beyond, i.e., algebra II, geometry, trigonometry, calculus);

Social Studies - 3 units;

Science - 2 units (not including General Science), one of which must be a laboratory course;

Visual/Performing Arts - 1 unit (fine arts courses in visual arts, music, dance and theatre); and

Electives - 3 units, selected from foreign language and combinations of the above courses (two units of foreign language are strongly recommended).

2. Institutions of higher education will work together with high schools in defining specific courses acceptable for the recommended high school core curriculum, in ensuring the successful implementation of requiring completion of a high school core curriculum for admission to public four-year institutions, and in developing a draft common high school transcript for consideration by the State Board of Education.
3. The completion of the recommended core high school curriculum as a requirement for admission to all public four-year colleges and universities will become effective for the high school graduating class of 1996 and all future graduating classes.

- 4.* Transfer students who have completed the 39 hour general education core defined in the Coordinating Board's articulation agreement will be exempt from the requirement of completing the high school core curriculum. For students who have not completed the recommended high school core requirement or have not completed the 39 hour general education core defined in the articulation agreement, the following conditions should be met for entrance into a public four-year institution.

Students Graduating within Five Years from Point of Application:

- remediate deficiencies in the high school core curriculum by taking noncollegiate course work prior to being given admission; or
- demonstrate academic ability by scoring at the 60th percentile on the ACT

Students Graduating more than Five Years from Point of Application:

- remediate deficiencies in the high school core curriculum by taking noncollegiate course work prior to being given admission; or
- demonstrate academic ability by scoring at the 60th percentile on the ACT prior to being given admission; or
- meet alternative institutional criteria that have been approved by the Coordinating Board.

- * Owing to institutional concerns regarding the treatment of students without the core, the Coordinating Board has invited institutions to submit alternative policies for the CBHE's consideration.

Appendix 3

National Collegiate Athletic Association

1990-91 NCAA Manual

Constitution - Operating Bylaws - Administrative Bylaws

Administrative Organization

14.3.1 Eligibility for Financial Aid, Practice and Competition, 1991-92

A student-athlete who enrolls in a Division I or Division II institution as an entering freshman with no previous full-time college attendance shall meet the following academic requirements, and any applicable institutional and conference regulations, to be considered a qualifier and thus be eligible for financial aid, practice and competition during the first academic year in residence.

14.3.1.1 Qualifier, Basic Requirements

A qualifier is defined as one who is a high-school graduate and who presented the following academic qualifications:

- (a) A minimum cumulative grade-point average of 2.000 (based on a maximum of 4.000) in a successfully completed core curriculum of at least 11 academic courses, including at least the following:

English	3 years
Mathematics	2 years
Social science	2 years
Natural or physical science	2 years
(including at least one laboratory course, if offered by the high school)	

The record of the above courses and course grades must be certified on the high-school transcript or by official correspondence, and

- (b) A minimum 700 combined score on the SAT verbal and math sections, or a minimum composite score on the ACT of 15 (if taken prior to October 28, 1989) or 18 (if taken on or subsequent to October 28, 1989). The required SAT or ACT score must be achieved under normal testing conditions on a national testing date (i.e., no residual, campus, testing).

(Revised January 10, 1990)

The following standards will apply in academic year 1992-93.

1. High School Diploma
2. Core high school curriculum composed of 11 units, including:

English	3 years
Mathematics	2 years
Social Science	2 years
Science	2 years
Electives (foreign language, etc.)	2 years
3. ACT of 17 or higher, or a combined verbal and mathematics SAT score of 700.

For those student-athletes first entering collegiate institutions on or after August 1, 1995, the NCAA will require the following standards to practice and play freshman year athletics in a Division I or Division II college or university:

1. Graduate from high school;
2. Successfully complete a core curriculum of at least 13 academic courses (this core curriculum includes at least three years in English, two in mathematics, two in social science, two in natural or physical science - including at least one laboratory class, if offered by the high school; and
3. Attain a grade-point average (based on a maximum of 4.000) and achieve a combined score on the SAT verbal and mathematical sections or a composite score on the ACT based on the following index scale

Core GPA	Minimum Required SAT	Minimum Required ACT
Above 2.500	700	17
2.500	700	17
2.475	710	18
2.450	720	18
2.425	730	18
2.400	740	18
2.375	750	18
2.350	760	19
2.325	770	19
2.300	780	19
2.275	790	19
2.250	800	19

2.225	810	20
2.220	820	20
2.175	830	20
2.150	840	20
2.125	850	20
2.100	860	21
2.075	870	21
2.050	880	21
2.025	890	21
2.000	900	21
Below 2.000, Not Eligible	XXX	XX

Appendix 4

Recommendations on the Recruitment of Missouri's Future Teachers

Coordinating Board for Higher Education April 26, 1991

Recommendation 1: Collaboration on School/College Issues by the State Board of Education and the Coordinating Board for Higher Education.

In order to provide systematic and continued articulation of state-level educational policies and practices, the Coordinating Board for Higher Education and State Board of Education should meet jointly at least once each year to discuss mutual interests and concerns, with particular attention to the following:

- (a) a high school core curriculum;
- (b) increasing the number of schools offering Advanced Placement Courses and the number of subjects in which Advanced Placement Courses are offered;
- (c) the recruitment of historically underrepresented populations into higher education, particularly into the teaching profession;
- (d) the requirements and related standards for becoming certified as a teacher in Missouri; and
- (e) the coordination of statewide student assessment, including the transition from the senior year in high school to the freshman year in college.

Recommendation 2: Entry-level Academic Achievement of Missouri's Future Teachers.

In partial fulfillment of the requirements for admission to teacher education programs, beginning in 1992 students under the age of 25 formally admitted to Missouri's teacher education programs must attain Enhanced ACT Composite or SAT scores that are at the 55th percentile or above, established for Missouri test takers for the year the examination was taken (currently an Enhanced ACT Composite score of 21 or higher). Students 25 years of age or older who believe that the ACT does not adequately measure their readiness for college-level work may be admitted through achievement of the equivalent percentile score on the ASSET. The percentile performance level on the ACT and the equivalent percentile for the ASSET shall increase to the 60th percentile in 1994.

Students not meeting this standard who are formally admitted to teacher education programs shall not constitute more than five percent of the students admitted beginning in 1992 and not more than seven percent admitted beginning in 1994. Such students must establish minimal academic competency in a manner to be determined by each institution.

Recommendation 3: Subject-area Knowledge of Missouri's Future Teachers.

The Department of Elementary and Secondary Education should set a minimum score for the NTE exit assessment that is sufficiently high to assure that Missouri's prospective teachers are competent in their fields of certification. At the **secondary** level, prospective teachers should attain a level of performance in their content field comparable to **well-prepared** arts and sciences majors in the same discipline.

Recommendation 4: Minority Scholarship Program.

The state of Missouri should fully fund the Minority Scholarship Program and increase the number of its scholarships in order to recruit more students from historically underrepresented populations to careers in teaching.

Recommendation 5: Additional Incentive Program.

The state of Missouri should develop and fully fund an additional teacher incentive program which would provide an automatic student scholarship/loan of \$3,000 per year for a maximum of three years for students who attain an Enhanced ACT Composite score of 25 or higher, maintain a college GPA of 3.0, and are formally admitted into a teacher education program. Repayment would be forgiven in one-third increments for each year the recipient teaches in a public or private elementary or secondary school in Missouri.

Recommendation 6: Alternative Entrance to the Profession.

The Missouri State Board of Education should study and explore various options, refinements, and incentives for further facilitating and implementing the existing Alternative Certification program at the **secondary** teaching level, as well as searching out additional avenues to Alternative Certification, e.g., a Teach for Missouri program, to increase opportunities available for entry into the teaching profession at both the elementary and secondary teaching levels. In all cases, Alternative Certification programs should require that new teachers demonstrate performance at an acceptable level in both subject area knowledge and methods of teaching.

Recommendation 7: Centers of Eminence for Improving Future Teaching.

Missouri should establish and fund Centers of Eminence in Teaching to study and research improvements in teaching around such themes as:

- (a) the application of technology and telecommunications in classroom teaching;
- (b) teaching in urban and inner city settings;
- (c) teaching in rural settings;
- (d) school restructuring;
- (e) effective school/college coalitions and related programs; and
- (f) outcomes based education accountability.

Proposals for Centers of Eminence should be made to the CBHE, and the state's share of the operating funds should be awarded competitively by the CBHE.

**Coordinating Board for Higher Education
Statewide Higher Education Performance Indicators
June 30, 1989**

A. Outcomes
(Student Performance, Behavioral/
Relational and Research/Public
Service Outcomes)

DIMENSIONS	STATISTICS	SOURCE	CBHE POLICY GOAL	DATA AVAILABILITY
Involvement	1. Assessment of students' involvement and participation in selected facets of their collegiate experience	NEW CBHE STUDY BASED ON THE MISSOURI SAS DATA BASE	Quality	Requires Additional Data Collection
Completions and Employment	1. Completion rates for full-time undergraduate degree-seeking students	CBHE/SAS	Access/Effectiveness	Becoming Available
	2. Number of degrees awarded by level and institution type	CBHE	Effectiveness	Available
	3. Percent of degrees awarded to women, minorities, and aliens by selected fields and degree levels	CBHE	Access/Effectiveness	Available
	4. Percent of prior year's graduating class employed, employed in state, employed in relevant field, pursuing additional education in selected fields of study, unemployed, other	NEW CBHE STUDY BASED ON THE MISSOURI SAS DATA BASE	Effectiveness	Requires Additional Data Collection
Performance	1. Percent distribution of Missouri students' scores on the GRE, MCAT, LSAT, GMAT, DESE Teacher Exit Test, NTE, ETS Field Exams, and other available tests as may be identified	TEST VENDOR/INSTITUTION	Quality/Effectiveness	Requires Additional Data Collection

DIMENSIONS	STATISTICS	SOURCE	CBHE POLICY GOAL	DATA AVAILABILITY
Performance (Cont.)	2. Pass rates of students taking selected professional and licensing examinations	TEST VENDOR/ INSTITUTION	Quality/Effectiveness	Requires Additional Data Collection
Perceptions and Attitudes: Employers and Alumni	1. Employer satisfaction with Missouri graduates' collegiate preparation 2. Alumni satisfaction with collegiate preparation	NEW CBHE STUDY BASED ON THE MISSOURI SAS DATA BASE	Quality/Effectiveness	Requires Additional Data Collection
Research	1. Percent distribution of R&D funds, by source, awarded to Missouri institutions 2. Dollar value of federal government grants and contracts per faculty member and as a percent of national average	CBHE/NSF CBHE	Quality Quality	Available Available
Public Service	1. Number of businesses and individuals served (and their level of satisfaction) through campus-based assistance centers or through organized/formal agreements (contracts, memorandums of agreement) with business, industry, and education and government agencies including teacher education 2. Number of businesses, industries, education, and government agencies sponsoring customized training the number of individuals trained, and the level of employer and employee satisfaction 3. Number and satisfaction level of people served by Cooperative Extension Programs	INSTITUTION INSTITUTION INSTITUTION	Access/Effectiveness Access/Effectiveness Access/Effectiveness	Requires Additional Data Collection Requires Additional Data Collection Requires Additional Data Collection

B. Resources (Financial, Human, Physical)

DIMENSIONS	STATISTICS	SOURCE	CBHE POLICY GOAL	DATA AVAILABILITY
Faculty	1. Demographic characteristics of full-time and part-time faculty: percent female, minority, tenured over age 55	INSTITUTION	Access	Available
	2. Percent of FTE faculty full-time		Quality	Requires Additional Data Collection
	3. Average full-time faculty salary by rank and institutional type as a percent of the national average	CBHE	Quality/Efficiency	Available
	4. Percent of full-time faculty time spent in instruction, research, public service, other	INSTITUTION	Quality	Requires Additional Data Collection
Investment in Higher Education	1. Percent distribution of E & G current fund expenditures for instruction, research, libraries administration, other	CBHE	Efficiency	Available
	2. Missouri E & G current fund expenditures as a percent of national average for instruction per FTE student, libraries per FTE student, and research per full-time faculty	CBHE	Efficiency	Available
	3. Percent distribution of E & G current fund revenues from tuition and fees, state appropriations, local appropriations, grants and contracts, private gifts, other	CBHE	Efficiency	Available

DIMENSIONS	STATISTICS	SOURCE	CBHE POLICY GOAL	DATA AVAILABILITY
Investment in Higher Education (Cont.)	4. Missouri E & G current fund revenues as a percent of national average from tuition and fees per FTE student, state and local appropriations per 1,000 capita, and federal grants and contracts per full-time faculty	CBHE	Efficiency	Available
	5. Total higher education appropriations as a percent of Gross State Product	CBHE	Efficiency	Available Every 2 Years
	6. Maintenance and repair appropriation as a percent of physical plant replacement value	CBHE	Efficiency	Available
Financial Aid	1. Percent distribution of student financial aid by source	CBHE	Access	Available
	2. Percent of undergraduate on-campus, aided student population whose financial aid need is fully met (i.e., within \$100 of calculated need)	INSTITUTION	Access	Requires Additional Data Collection
	3. Total dollar amount of unmet need of aided, undergraduate enrolled students	INSTITUTION	Access	Requires Additional Data Collection
	4. Percent of total undergraduate enrollment receiving financial aid in some form	CBHE	Access	Available

100

100

C. Contexts (Demographic, Economic)

DIMENSIONS	STATISTICS	SOURCE	CBHE POLICY GOAL	DATA AVAILABILITY
Access/ Participation	1. College participation rates of Missouri public high school graduates	DESE/CBHE/IPEDS	Access	Available
	2. Percent of all students part-time, minority, female, over age 25, by level	CBHE/INSTITUTION	Access	Available
	3. Percent of new undergraduate students who are transfers by institution type	CBHE/SAS	Access	Available
Preparation	1. Percent of entering students with pre-college curriculum	CBHE/ACT	Quality/Access	Available
	2. ACT score distribution by score interval of entering freshmen	CBHE	Quality/Access	Available
	3. Percent distribution of first-time entering freshmen by high school class rank	CBHE	Quality/Access	Available
	4. Score distribution and G.P.A. of entering graduate students on appropriate entrance exams (e.g., GRE, etc.)	INSTITUTION	Quality/Access	Requires Additional Data Collection
Affordability	1. Tuition and required fees as a percent of national average by type of institution	CBHE	Access	Available
	2. Tuition and required fees as a percent of per capita disposable income	CBHE	Access	Available

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Background Information

RESOURCES	STATISTICS	SOURCE	CBHE POLICY GOAL	DATA AVAILABILITY
1.	Number of institutions and percent distribution of enrollment by institutional type and instructional level	CBHE	Access	Available
2.	Dollar amount of student financial aid by source	CBHE	Access	Available
3.	Dollar amount expended for MSG program	CBHE	Access	Available
4.	Dollar amount of unmet need of MSG applicants	CBHE	Access	Available
5.	Dollar amount expended for Bright Flight program	CBHE	Access	Available
6.	Percent of Bright Flight, National Merit and National Achievement eligible students enrolled as freshmen in Missouri institutions	INSTITUTION	Quality/Access	Partially Available
7.	FTE Student/FTE faculty ratio	CBHE	Efficiency	Available
8.	FTE Student/FTE staff ratio	CBHE	Efficiency	Available
CONTEXT				
1.	Adult Literacy Rate	CBHE	Available	Available
2.	Percent distribution of population by educational level	CBHE	Available	Available But Dated
3.	Percent of population between 18 and 34 yrs. old that are minority, female	CBHE	Available	Available But Dated
4.	Number of students graduating from Missouri public high schools	DESE	Access	Available
5.	High school graduation rate	DESE	Access	Available
6.	Replacement value of buildings	INSTITUTION	Efficiency	Available
7.	Replacement value of equipment	INSTITUTION	Efficiency	Available

Appendix 6

Missouri Coordinating Board for Higher Education Constitutional and Statutory Powers

The CBHE has constitutional status under Article IV, section 52, of the Missouri Constitution, a status shared only by the University of Missouri Board of Curators. The role and charge to this Board in providing for the coordination of higher education are stated in the Board's statutory authority described in Chapter 173 RSMo. Selected statutory responsibilities of the Board include the following.

173.020

- (1) Conducting studies of population and enrollment trends ...
- (2) Identifying higher education needs in the state in terms of the requirements and potential of the young people and in terms of labor force requirements ...
- (3) Developing arrangements for more effective and more economical specialization among institutions in types of education programs offered and students served ...
- (4) Designing a coordinated plan for higher education in the state ...

173.030

- (1) Requesting the governing boards of all state-supported institutions to submit to the coordinating board any proposed policy changes which would create additional institutions of higher education ...
- (2) Recommending to the governing board of any institution of higher education in the state the development, consolidation, or elimination of programs, degree offerings, physical facilities or policy changes where that action is deemed by the coordinating board as in the best interests of the institutions themselves and/or the general requirements of the state. ...
- (3) Recommending to the governing boards of state-supported institutions of higher education, including public junior colleges receiving state support, formulas to be employed in specifying plans for general operations, for development and expansion, and for requests for appropriations from the general assembly. ...

173.005.2

- (1) The coordinating board for higher education shall have approval of proposed new degree programs to be offered by the state institutions of higher education;

- (2) ... establish guidelines for appropriation requests ...;
- (3) No new state supported senior colleges or residence centers shall be established except as provided by law and with approval of the coordinating board for higher education;
- (4) ... establish admissions guidelines consistent with institutional missions;
- (5) ... establish policies and procedures ... relating to the residence status of students;
- (6) ... establish guidelines to promote and facilitate the transfer of students ...;
- (7) ... collect the necessary information and develop comparable data for all institutions ... to delineate the areas of competence of each of these institutions ...;
- (8) Compliance with requests from the coordinating board for institutional information ... shall be a prerequisite to receipt of any funds for which the coordinating board is responsible for administering; and,
- (9) If any institution ... willfully fails or refuses to follow any lawful guideline, policy or procedure established or prescribed ... the coordinating board may ... withhold or direct to be withheld ... any funds the disbursement of which is subject to the control of the coordinating board, or may remove the approval of the institution as an "approved institution"

Appendix 7

Summary Listing of Public Policy Questions and Perspectives

I. Mission and Providing Access to Appropriately Prepared Students

This discussion raises certain public policy issues regarding Missouri's system of public and independent higher education institutions and its relationship to the elementary and secondary school system. An issue of central importance is the state's policy regarding access as reflected in admissions standards for Missouri's public colleges and universities. Indeed, one can expect that any discussion of this matter will be no less difficult than the discussions held in recent years by the members of the National Collegiate Athletic Association in setting standards for participation in intercollegiate athletics (the NCAA standards are provided in Appendix 2 of this report). In addressing the policy issues related to institutional missions and admissions standards, the Coordinating Board would benefit from the Task Force considering several questions, including the following.

1. How can Missouri's higher education system and its K-12 system cooperate to assure that high school graduates are well prepared for college and the world of work?
2. How can Missouri's higher education system and its K-12 system cooperate to promote increased high school graduation rates, higher collegiate participation rates, and improved baccalaureate completion rates for minority students?
3. What programs could be implemented to encourage students to take responsibility for remedying deficiencies while in high school, rather than at college? How can high school and collegiate faculties work together to address the underprepared student problem?
4. What should be the respective roles of Missouri's four-year institutions and community colleges in providing instruction to the underprepared student? Should Missouri's public four-year colleges and universities continue to admit large numbers of low-achieving and inadequately prepared students? If so, what limitations, if any, should exist and which four-year institutions should be designated for this role?
5. How can the Coordinating Board's policies regarding articulation between institutions contribute to the solution of the underprepared student problem? Should students scoring among the lowest third of all high school graduates or failing to complete a college preparatory curriculum who reside in an open-enrollment community college district be denied admission to a public four-year college or university? Should any low-achieving or inadequately prepared out-of-state student be admitted to a Missouri public four-year college or university?

6. What policy initiatives are necessary to sustain and enhance Missouri's independent colleges and universities in terms of enrollment policies?
7. What changes need to be made in the admissions guidelines of the very selective Missouri universities to make them even more competitive nationally?

II. Mission and Preparation of Missouri's Future Classroom Teachers

The role of the classroom teacher is vital to any person's future. A single teacher can make the difference in the lives of hundreds of students. Teachers can nurture interest in critical subjects such as science and mathematics, can help students to aspire to reach their potential in all areas, and can instill a love for lifelong learning. Clearly, many questions involve how and where Missouri might best prepare its teachers as well as the relationship of those issues to institutional missions. Some of these questions include the following.

1. Should all of the public four-year colleges and universities, except the University of Missouri-Rolla, offer teacher education programs? If so, how selective should their standards be for admission to and graduation from these programs?
2. What are some specific strategies that can be employed to increase the number of minorities in teacher education programs and the profession?
3. What should be the differential roles of Missouri's public and independent universities in producing new teachers and in meeting the needs teachers have for continuing professional education?

III. Mission and Strengthening Graduate Education and Research

Strengthening graduate education and research will not be easy, but change is essential if Missouri is to meet the challenges in the remainder of this decade and in the early 21st Century. Some important questions to consider include the following.

1. How does Missouri encourage more students to pursue baccalaureate and graduate degrees in such disciplines as foreign languages, life and physical sciences, mathematics, philosophy, and the humanities? Are these the right disciplines, or the only disciplines, that should be identified as being critical to Missouri's future?
2. What evidence or other criteria are needed as indicators that graduate education and research programs at Missouri's public and independent doctoral degree-granting and research universities are becoming stronger?

IV. Mission and Strengthening Vocational Technical Education

Vocational/technical education is extremely important to Missouri in a number of ways. Businesses and industries rely on it to provide the skilled workforce that will keep them competitive. Missourians who are already working need these services to upgrade or acquire the new skills that will keep them employed. Further, the fifty percent of our high school students who are not college bound face what one observer has called a choice between "high skills or low wages." Strengthening these services requires that the following questions be addressed.

1. What policy initiatives are necessary to achieve a strengthened vocational/technical education system that will best serve the needs of Missouri's businesses and industries throughout the state for a highly skilled workforce and that will provide high wages for graduates with high skills?
2. Should the funding policies for Missouri's community colleges be revised to provide greater incentives for the community colleges to serve the needs of students, businesses and industries outside their service regions?

V. Mission and the Efficiency of Program Operations

Several public policy questions and perspectives revolve around the issues of program effectiveness and program duplication. Some of these include the following.

1. What constitutes unnecessary or inappropriate duplication of programs from the state-level perspective, particularly in the applied and professional areas?
2. What criteria should be used by institutions to evaluate which programs should be emphasized, maintained at current level, reduced, or eliminated?
3. If it is important that Missourians have access to a comprehensive array of baccalaureate programs somewhere, but not necessarily everywhere, what criteria should be used and/or developed for making decisions regarding where programs should be offered and which institutions should offer them?

VI. Efficiency of Administrative Operations

While striving for effectiveness in administrative operations is a noble goal, the data suggest that increases in administrative and non-faculty assignments in Missouri's public four-year colleges and universities run counter to the state's goals for improvement in the institution's performance in instruction, research and public service. Fulfilling the mission of our institutions is primarily the activity of faculty, not the administrative and non-faculty staff. This discussion suggests that

the following questions regarding the efficiency of institutional mission implementation should be considered.

1. What is an appropriate balance between the proportion of administrative and non-faculty costs on a campus compared to the proportion of faculty costs?
2. What policies are appropriate to encourage the reduction of costs in administration and non-faculty staff?

VII. Mission and Accountability to the People of the State

The need for institutional accountability to regain and sustain the public trust is clear. The mandate for more accountability will remain for many years to come; indeed, it is becoming increasingly institutionalized as the regional accrediting agencies include it in their expectations of institutional performance. As states and institutions move to become more accountable, certain questions of public policy must be addressed, including such questions as the following.

1. What measures are appropriate as indicators of program quality, in addition to the nationally normed tests that are currently being used?
2. Should the accountability measures that were included in Senate Bill 353 be incorporated into the CBHE's performance indicators? What other steps may be warranted to strengthen the system's accountability structures?
3. To what extent should there be academic or financial incentives to reward institutions that achieve stated objectives?

VIII. Funding Policies

The issue of funding was addressed at length by those attending the November 1991 higher education conference sponsored by the Pew Higher Education Research Program and WICHE. There are several public policy issues related to student charges the western states are pursuing, and these matters are not unlike those which need to be addressed in Missouri. Some of these questions include the following.

1. What are the alternatives to raising tuition as a means to generate needed revenues?
2. How much of the cost of higher education should the student and/or family bear?
3. Should state tuitions be raised for those who can afford more, so that more funds are available for students who have greater financial need?

IX. State Appropriations

Missouri obviously needs an acceptable funding policy for higher education which will serve well the present and immediate future needs of the state and its institutions. In the development of funding policies that address our current challenges, certain questions arise that require attention. These questions include the following.

1. What combination of capitation grants and incentive appropriations would encourage greater institutional success in achieving the state's goals for higher education?
2. What are the issues associated with the use of incentive funding to promote improvement in institutional performance? Improved student achievement? Improved retention and graduation rates?
3. What kinds of strategies can Missouri initiate to encourage the increased participation of underrepresented populations in Missouri's system of higher education?
4. How can institutions effectively demonstrate accountability in their use of state dollars in meeting the state's goals for higher education?
5. Is it feasible or even wise for Missouri to establish a joint state and institutional bonding authority to help finance the renovation and repair of buildings and to acquire state of the art equipment? Are there any other alternatives to raising resources for this purpose?
6. What changes, if any, should be made in Missouri's financial aid programs to encourage better student preparation and collegiate performance and to increase student choice?

X. Governance

The challenge to the Coordinating Board's Task Force on Critical Choices for Higher Education is to demonstrate that Missouri's current system of decentralized governance can work. The extent of decentralization in this system has been documented in a recent study done of the governance of higher education in 16 European countries and 25 states. That study reported that Missouri was ranked the third most decentralized system. While decentralized management of institutions and corporations has led to greater flexibility in response to change, some form of centralized policy development and planning for the system, or the corporation, as a whole has merit and is usually necessary. A key issue for Missouri, as well as all other states, is to attain an appropriate balance between these competing forces. Questions to be considered include the following.

1. Is the current balance of central coordination and institutional autonomy appropriate?
2. What evidence supports the effectiveness of the current system? What evidence suggests change is desirable?

VI. Bibliography

Associated Industries of Missouri and the Missouri Chamber of Commerce. *Preparing for Missouri's Future: An Action Plan for Strengthening Elementary and Secondary Education in Missouri.* A Report of the Missouri Business Alliance for Quality Education, Jefferson City, Missouri, December 1990.

Battelle. *A Strategic Science and Technology Investment Plan.* Kansas City Area Development Council, June 1990.

Civic Progress of St. Louis. *Civic Progress Higher Education Study.* St. Louis, Missouri, July 1990.

Confluence St. Louis/Kansas City Consensus. *Competitive Edge: Investing in Higher Education for Missouri's Future.* April 1990.

Governor's Advisory Council on Literacy. *Jobs Without People: the Coming Crisis for Missouri's Workforce.* October 1989.

Jobs for the Future, Inc. *Education and Training in the Missouri Economy.* Sommerville, Massachusetts, Spring 1990.

Jobs for the Future, Inc. *Attitudes and Obstacles Concerning Work-Related Learning: A Survey of Missouri Workers.* Sommerville, Massachusetts, Spring 1990.

Jobs for the Future, Inc. *Voices from Across the "Show Me" State: Missourians Talk About Their Economy.* Sommerville, Massachusetts, October 24, 1989.

Missouri Business and Education Partnership Commission. *Report of the Missouri Business and Education Partnership Commission.* January, 14, 1991.

Missouri Coordinating Board for Higher Education. *Challenges and Opportunities: Minorities in Missouri Higher Education.* Jefferson City, Missouri, November 1988.

Missouri Coordinating Board for Higher Education. *Assessment in Missouri Public Colleges and Universities.* Jefferson City, Missouri, February 1989.

- Missouri Coordinating Board for Higher Education. *Missouri Higher Education and Economic Development: Stimulating and Abetting Insightful Action*. Jefferson City, Missouri, May 1990.
- Missouri Coordinating Board for Higher Education. *Regional Needs Assessment Report: Metropolitan Regions and Summary Report*. Jefferson City, Missouri, February 1990.
- Missouri Coordinating Board for Higher Education. *Regional Needs Assessment Report: North Region*. Jefferson City, Missouri, February, 1990.
- Missouri Coordinating Board for Higher Education. *Regional Needs Assessment Report: Southeast Region*. Jefferson City, Missouri, February, 1990.
- Missouri Coordinating Board for Higher Education. *Regional Needs Assessment Report: Southwest Region*. Jefferson City, Missouri, February, 1990.
- Missouri Coordinating Board for Higher Education. *Statistical Summary of Missouri Higher Education, 1990 - 1991*. Jefferson City, Missouri, July 1991.
- Missouri Coordinating Board for Higher Education. *The Invisible Campus: Off-campus and Out-of-district Instruction in Missouri*. Jefferson City, Missouri, June 1989.
- Missouri State Council on Vocational Education. *Recommendations on the Delivery of Vocational Education for Missouri, 1986 - 87*. Jefferson City, Missouri, 1988.
- Missourians for Higher Education. *Show Me The Future: The Needs of Missouri Higher Education*. January 18, 1990.
- National Center for Higher Education Management Services, Inc. *An Assessment of Employer Needs: A Study Sponsored by the Missouri Business and Education Partnership Commission*. Boulder, Colorado, January, 1991.